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ABSTRACT

Developed by experienced migrant education teachers incorporating Sight and Sound Program concepts and Migrant Skills List numbers, this volume presents predrafted individual short-term Plan/Records for secondary level mathematics, algebra, and geometry, plus step-by-step directions for their use by Oregon resource teachers, classroom teachers, and aides. The approach assumes that the migrant student will only be available for instruction for a short period of time, generally 2 to 6 weeks. Following a quick assessment, using available information, the teacher selects one or more short-term plans, each addressing a single content area and focusing on a single limited objective. The objective, a set of activities expected to lead to that objective, and a criterion statement are laid out on a single-page form, constituting the plan portion of the Plan/Record. The bottom part of the sheet contains a place to record if and when the criterion is met, who attests to this fact, and relevant comments, forming the record portion of the Plan/Record. Mathematics concepts include the metric system, probability of outcomes, rounding whole numbers, division of 3-digit numbers, converting decimal to percent, fractions, prime numbers, proportions, ratios, comparisons, right angles, using a protractor, relating percents to circle graphs, classifying triangles, constructing bar graphs. (NEC)

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PREDRAFTED INDIVIDUAL SHORT - TERM PLAN/RECORDS

(SECONDARY LEVEL)

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PREDRAFTED INDIVIDUAL SHORT-TERM PLAN/RECORDS

DIRECTIONS FOR RESOURCE TEACHERS, TEACHERS AND AIDES

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September 1981

FUNDED BY
OREGON ESEA
I-M PROGRAM

INTRODUCTION

One of the problems that must be frequently faced in migrant education is that of providing instruction to the active migrant child who attends a particular school for only a short period of time. While the number of active migrants in Oregon is declining there is still a problem of considerable magnitude. In school year 1980-81 there were 5,489 active migrants out of a total of 9,797 eligible for the regular and summer term programs.

One method which appears promising as a means of addressing the active migrant child's individual needs is a technique called Individual Short-term Plan/Records. The use of this approach by teachers has gradually increased since being introduced four years ago. It is currently being used in various areas of the state. In this approach the teacher assumes that the student will only be available for instruction for a short period of time, generally two to six weeks. After a quick assessment, using whatever information is available, the teacher drafts one or more short-term plans. Each plan addresses a single content area and focuses on a single limited objective. The objective, a set of activities expected to lead to that objective, and a criterion statement are laid out on a single page form. This is the plan portion of the Plan/Record. The bottom part of the sheet contains a place to record if and when the criterion was met, who attests to this fact, and any relevant comments. This constitutes the record portion of the Plan/Record.

As might be expected many teachers found numerous students with similar if not identical needs for specific instructional activities. This raised the possibility of pre-drafting Individual Short-term Plan/Records that could be used by the teacher with any student who had the particular need addressed by an objective. A group of five experienced migrant education teachers who had made extensive use of Individual Short-term Plan/Records and Sight and Sound was brought together to generate pre-drafted Plan/Records to cover situations which they felt were frequently encountered with active migrant children.

It was believed that Individual Short-term Plan/Records could be developed in the secondary level by using several Sight and Sound Program concepts. Various program concepts were chosen and the development of Individual Short-term Plan/Records in these areas began. The areas chosen were Communication Arts, Government, History, Mathematics, and Science.

The area of Personal Finance was also developed, despite not being a Sight and Sound concept. Because of the requests and necessity to produce this subject area, it was only appropriate to develop it at this time.

The Individual Short-term Plan/Records in this booklet will contain these areas:

- Communication Arts
- Government
- History
- Mathematics
- Personal Finance
- Science

In several plans, corresponding Sight and Sound concept numbers are listed to show the linkage of Short-term Plans to Sight and Sound concepts. This will greatly benefit the users of both the Sight and Sound Programs and Individual Short-term Plan/Records Project. In addition, to further combine programs and to have a flow of continuity, some of the Math programs will have Skills List numbers. The Skills List numbers are to be used for whatever purposes and in whatever ways are designated by the Migrant Education Service Center in Salem. For further information on Skills List matters contact Mr. Dan Santos of that office, phone 378-6853.

Several classroom teachers are to be acknowledged for their line efforts in developing these Individual Short-term Plan/Records. Almost all have had experience in writing single concept programs and have authored various Sight and Sound programs. These people are Barbara Griffin of Sprague High School who wrote all of the Communication Arts plans; Maria Hinojosa of Marion County was responsible for writing the Government and History plans; Robert Dedrick of Silverton Union High School developed the Mathematics plans; Jinny Carter of McKay High School wrote the Personal Finance plans; and James Brueckner of Silverton Union High School wrote the Science Programs. Technical assistance and coordination of the secondary level programs was performed by Merced Flores, M.E.S.C. Secondary Curriculum Development Specialist. Bill Savard of the Northwest Regional Educational Laboratory served as a consultant. A special thanks goes to Doreen Lucero and Gayle Jolliffe who spent many hours typing these Short-term Plans.

Directions for Resource Teacher:

If you are a resource teacher, either traveling or working from a fixed location, who works through regular classroom teachers or aides you have the option of using either the loose-leaf reproducible version or the bound booklet version of the pre-drafted Individual Short-term Plan/Records.

In order to use the loose-leaf version you will need access to a xerox or other easy to use duplicating machine to replenish your initial stock of pre-drafted Individual Short-term Plan/Records. Your initial stock consists of 10 copies of each Plan/Record. Whenever your stock drops to three or less copies of any one Plan/Record simply xerox the required number and put them into the correct place in your folder.

Step I

Carefully review the entire set of pre-drafted Plan/Records. Being thoroughly familar with the content will greatly increase your ability to use them efficiently. Remeber, these pre-drafted Plan/Records are not your only tools. You will have to decide when and when not to use them.

Step II

Consult with the teacher or aide who will be working directly with the child. If possible work with or at least observe the child. Review the range of possible Plan/Records that could be used with the child in question at this particular point in time. Jointly select one or more Plan/Records. Discuss and decide upon the time period to be covered. Keep it as short as practical. Fill in the dates. Discuss the activities. Check to see that proper materials are available. If not, take action to obtain them. Carefully review the criterion statement, make certain that the teacher (or aide) understands it. Leave the Plan/Record with the teacher (or aide) with the understanding that you will be checking on it on your next visit. Arrange for telephone consultation in case there are problems in the meantime.

Step III

As Individual Short-term Plan/Records are completed have the teacher (or aide) fill out the rating form on the back of each one. Then collect them in chronological order by location. At the end of the term they will be summarized on a regular Individual Short-term Plan/Record Summary Sheet (Form OF 9). The Project Coordinator will discuss data collection procedures further with you individually.

Directions for Classroom Teachers (and Aides) Who Provide Direct Instruction to Students:

As a classroom teacher you will most likely be using the bound booklet version of the pre-drafted Individual Short-term Plan/Records, UNLESS you work under the direction of a resource teacher and a decision has been made to try the loose-leaf version. The content of both versions is the same. We are trying both in different locations so as to learn the advantages of the different formats. The following directions apply to the bound booklet version.

Step I

Carefully examine each of the six booklets (Communication Arts, Government, History, Mathematics, Personal Finance, and Science) to become thoroughly familiar with their content. If a child has educational problems in either of these areas, select the appropriate booklet(s) and enter his name and other identifying information on the cover. The Plan/Records in the booklets are arranged roughly in order of difficulty but they do not constitute an iron-bound sequence. Feel free to vary the order and to skip items. Each of these students need many skills. Our task for the moment is to find one or more appropriate tasks he needs to undertake now and to get underway with it immediately. As these tasks are completed another can be started.

Step II

The criterion statements at the bottom of each sheet can be used in a bracketing technique to find an appropriate place to start with the student. After talking with the student select a sheet near the front of the booklet. Informally test him against the criterion statement. If he accomplishes it easily, try something considerably more difficult from the back of the booklet, if that is too hard try something toward the middle, and so on until you have reached a decision as to what might be appropriate.

Step III

After you have selected one or more appropriate Plan/Records simply enter the planned dates at the top of the sheet and get under way with the activities.

Step IV

At the end of the designated time period, or sooner if the student seems to be making rapid progress, check (test) the child according to the criterion statement at the bottom of the sheet. If the child meets the criterion (i.e., passes the test) record that fact by checking the YES space and dating and signing in the designated places. If he does not meet the criterion, do the same after checking the NO space. Enter the total days the student participated out of the total actual school days in the planned period. Then fill in the rating form on the back of the Plan/Record.

Step V

Review your results. Was the task clearly too hard? Too easy? Should you have allowed more time? Less time? Was he absent so much that he could not be expected to meet the criterion? With these questions and your answers in mind start the selection process for the next Plan/Record. In some cases you may want to modify a Plan/Record. To do so simply write directly on the sheet. In extreme cases you may want to create a whole new Plan/Record. Blank forms for that purpose are provided at the back of the booklets. It is suggested that you gain some experience with the pre-drafted Plan/Records before creating new ones. How much experience is sufficient is a matter for your judgment.

Step VI

Accumulate the completed Plan/Records by leaving them right in the booklets. Keep the booklets even if the student leaves the school. At the end of the term all of the Plan/Records will be summarized. Your resource teacher, someone from the area office, or the Project Coordinator will help you with the summary at that time.

Sources

Many of the sources you may want to use are listed or attached on the Individual Short-term Plans. Since many of the plans were developed to go along with the Sight and Sound filmstrip/cassette program, you may want to use or acquire these programs. Sight and Sound Program information is available by calling Merced Flores at 378-6853. Do not feel obligated to use the listed materials. These are only suggestions.

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Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ____ **Age or Grade** ____________
Last **First**

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45601, 45902, 51303, 51304
Sight & Sound 0.2.1.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know some of the basic conversions from the metric system to the English system of measurement in weight.

Activities: What will be done, when, how much (time), by whom?

The teacher should have a pair of balances, one metric, and one English, so the student can see how the same object weighs on the two systems. The teacher should then give the student the basic conversion formulas.

1 kilogram = 2.2 pound
1 gram = .035 ounces

Thus to find the weight in pounds when you know the number of kilograms, you multiply the weight in kilograms by 2.2. In a similar fashion, to find the weight in ounces, multiply the number of grams by .035. The teacher should give several problems of both types for the student to do.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a metric weight to an English weight.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: Yes __________ **No** __________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ______________

Student Name ____ **Age or Grade** ____________
Last First

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45602, 45902, 51303, 51304
Sight & Sound 0.2.1.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know some of the basic conversions from the English system to the metric system in weight.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should have a pair of balances, one metric and one English, so the student can see how the same object weighs in the two systems. The teacher should thus give the student the basic conversion formulas.

1 pound = .045 kilogram
1 ounce = 28.3 grams

Thus to find the weight in kilograms when you know the number of pounds, you multiply the weight in pounds by .045. In a similar fashion, to find the weight in grams, multiply the number of ounces by 28.3. The student should do several examples of both types to become familiar with the method.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to change an English weight to a metric weight.

Total Days Participation ____________ **out of a possible** ______________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last**) ____________ (**First**) **Age or Grade** ____________

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45602, 45902, 51303, 51304
Sight & Sound 0.2.1.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic conversion from the English system to the metric system in temperature.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should have a Fahrenheit and Celsius thermometer, so the student can see what a particular temperature will be in both systems. The teacher should then give the student the basic conversion formula.

$$C = \frac{5}{9} (F - 32)$$

Thus to find a Celsius temperature, subtract 32 from the Fahrenheit temperature and multiply that number by the fraction $\frac{5}{9}$. The student should do several problems of this type to became familiar with the method.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to change English temperature measures to metric temperatures.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____________ (**Signature**) ____________ (**Title**)

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ **to** ________________

Student Name ____ **Age or Grade** ______________
Last **First**

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45602, 45902, 51303, 51304
Sight & Sound 0.2.1.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know the basic conversion for the metric system to the English system in temperature.

Activities: What will be done, when, how much (time), by whom?

The teacher should have a Fahrenheit and Celsius thermometer, so the student can see what a particular temperature will be in both systems. The teacher should then give the student the basic conversion formula:

$F = 1.8C + 32$

Thus to find a Fahrenheit temperature, multiply the Celsius temperature by 1.8 and add 32 to that product. The student should do several problems of this type to become familiar with the method.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change metric temperatures to English temperatures.

Total Days Participation ______________ **out of a possible** ________________

Criterion Attained: Yes ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ______________________ ______________________ **Age or Grade** ____________
Last **First**

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45602, 45902, 51303, 51304
Sight & Sound 0.2.1.5

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know some of the basic conversions from the English system to the metric system in length.

Activities: What will be done, when, how much (time), by whom?

The teacher should have some English and metric measuring sticks, so the student can see how long a particular length measures in both systems. The teacher should then give the students the basic conversion formulas.

1 mile = 1.61 km
1 yard = .91 meter
1 inch = 2.54 cm

Thus to find the length in kilometers when the number of miles is known, multiply by 1.61. In a similar fashion, to find the number of meters, multiply the number of yards by .91, and to find the number of centimeters when the number of inches is known, multiply by 2.54. The student should do several examples of both types to become familiar with the method.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a English length to a metric length.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: Yes ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ **Last** **First** **Age or Grade** ____________

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45602, 45902, 51303, 51304
Sight & Sound 0.2.1.6

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know some of the basic conversions from the metric system to the English system in length.

Activities: What will be done, when, how much (time), by whom?

The teacher should have some English and metric measuring sticks, so the student can see how a particular length measures in both systems. The teacher should then give the students the basic conversion formulas.

1 kilometer = .62 miles
1 meter = 1.09 yards

Thus to find the length in miles when the number of kilometers is known, multiply by .62. In a similar fashion to find the number of yards when you know the number of meters, multiply by 1.09. The student should do several examples of both types to become familiar with the method.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a metric volume to an English volume.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ **Last** **First** **Age or Grade** ______

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45602, 45902, 51303, 51304 Sight & Sound 0.2.1.7

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know some of the basic conversions from the metric system to the English system in volume.

Activities: What will be done, when, how much (time), by whom?

The teacher should have some English and metric volume measuring devices, so the student can see how much a particular amount of liquid measures in both systems. The teacher should then give the students the basic conversion formulas.

1 liter = .26 gallons
1 ml = .03402

Thus to find the volume in gallons when you know the number of liters, multiply by .26. In a similar fashion, to find the volume in ounces when you know the number of milliliters, multiply the number by a .034. The student should do several examples of both types to become familiar with the method.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test the student will be able to change a metric volume to an English volume.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: Yes ______ **No** ______ **Date** ______

Teacher: ______
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age or Grade** ____________
Last First

Content Area General Math **Skills List No.** 44701, 44702, 45301A 45602, 45902, 51303, 51304
Sight & Sound 0.2.1.8

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know some of the basic conversions from the English system to the metric system in volume.

Activities: What will be done, when, how much (time), by whom?

The teacher should have some english and metric volume measuring devices, so the student can see how much a particular amount of liquid measures in both systems. The teacher should then show the basic conversion formulas.

1 gallon = 3.79 liters
1 ounce = 29.6 ml.

Thus to find the volume in liters when you know the number of gallons, multiply the number of gallons by 3.79. In a similar fashion, to find the volume in milliliters when you know the number of ounces, mutiply the number of ounces by 29.6. The student should do several problems of both types to become familiar with the method.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change an English volume to a metric volume.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: Yes ___________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age** __________
Last First **or**
Grade __________

Content Area General Math **Skills List No.** 45601, 45602, 45603
Sight & Sound 0.2.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will learn the basic prefixes for the metric system.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will have to introduce to the student the prefixes and their value to the student. This is most easily done by using the following chart.

milli	centi	deci	meter liter gram	Deka	Hecto	Kilo
$\frac{1}{1000}$	$\frac{1}{100}$	$\frac{1}{10}$	1	10	100	1000

The teacher can point out that the six prefixes in the chart will all go onto the base words meter, liter and gram, and will represent that amount of that base word. The teacher should use a meter stick and point out how the units compare to each other.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to know the basic prefixes for the metric system.

Total Days Participation ______________ **out of a possible** __________________

Criterion Attained: **Yes** ____________ **No** _____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ **to** ________________

Student Name ____ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** 45601, 45902, 53104, 53402
Sight & Sound 0.2.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to rewrite a value of a metric number as an equivalent number with another unit.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will want to review with the student the metric system prefix chart, and the prefixes value. The teacher should have on hand a meter stick so that the student can see the metric size of the numbers being discussed. The teacher should ask the student to find a length on the stick, for example, 30 cm. The student can then be asked how many mm, dm, and meters that represents. As the student does several of these, the teacher can help the student discover the process of converting by using the moving decimal point technique.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to convert metric value from one value to another.

Total Days Participation ______________ **out of a possible** __________________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ______________________________________ **Age or Grade** ____________
Last First

Content Area General Math **Skills List No.** 45902, 46202 45601, 45901A, 45901B
Sight & Sound 0.2.4

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic unit of length in the metric system.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should have several metric sticks on hand. The student will notice that it is very close to a yard. The teacher should allow the student to measure some small and large things, writing the distances as decimal numbers, and than rewriting them with different prefixes. The student and teacher can discuss the best units for different sized objects.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to use the basic unit of length in the metric system.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ ______________ **Age** ______________
Last First or
Grade ______________

Content Area General Math **Skills List No.** 50101, 53400
Sight & Sound 0.2.5

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic unit of volume in the metric system.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should have a one-liter container, a one-quart container and several different sized graduated cylinders. The student should be allowed to work with these to see that a liter is very close to a quart in volume. The teacher should then encourage the student to measure large and small volumes, and convert them to different metric prefixes. The student could also encourage the student to look in grocery stores and see what things are sold with a metric measurement, and the type of prefixes they use.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to use the basic unit of volume in the metric system.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Last** ______________ **First** ______________ **Age** ______________ **or Grade** ______________

Content Area General Math **Skills List No.** 53103, 53104
Sight & Sound 0.2.6

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic unit of weight in the metric system.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should have a metric balance and several different objects for the student to measure. The student will discover that the group the basic unit, has about the same weight as a paper clip. A penny weighs about 3 grams. The student should be encouraged to determine what the various weights would be with different prefixes. The student should also discuss with the teacher what would be appropriate prefixes for different sized objects.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to know the basic unit of weight in the metric system.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ **Signature** ______________ **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ (Last) ______________ (First) **Age or Grade** ______________

Content Area General Math **Skills List No.** 603

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the probability of sums of dice.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, And the Sum Is, to introduce the student to the probability of sums from dice. The student will discover that the process is very similar to other probability situations. He will discover that he needs to find the sums of the numbers and be aware of duplications before he proceeds.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the probabilities of sums of dice.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ (Signature) ______________ (Title)

AND THE SUM IS . . .

Louise was playing Monopoly. She wondered what sum occurred most often when the dice were rolled. What do you think? ________

1) Fill in the table to find the sums for rolling two die.

2) Which sum occurs most often? ______

3) a) How many of the sums are 5? _____

   b) List them with the green die number listed first.

   ___,___ ___,___ ___,___ ___,___

   c) The probability of rolling a sum of 5 is ____ out of _____.

This can be written P(sum = 5) = $\frac{4}{36}$.

		RED DIE					
		⚀	⚁	⚂	⚃	⚄	⚅
GREEN DIE	⚀	2	3	4	5	6	7
	⚁	3	4	5	6	7	8
	⚂	4	5	6	7	8	9
	⚃	5	6	7	8	9	10
	⚄	6	7	8	9	10	11
	⚅	7	8	9	10	11	12

4) Find P(sum = 10). ______

5) Find P(sum = 2). ______

6) Find P(sum = 7). ______

7) Find P(sum = 11). ______

8) Find P(sum = 7 or 11). ______

9) Find P(sum > 6). ______

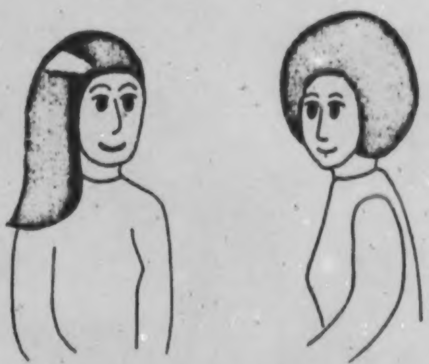
10) Find P(sum $\leq$ 4). ______

11) Find P(sum is even). ______

12) Find P(sum is prime). ______

Louise asked her teacher what would happen if the dice were rolled 72 times. Ms. Garcia answered, "On the average you could expect to get the sum of 5 eight times out of 72 rolls. This can be shown by multiplying $\frac{4}{36}$ x 72."

For practice, Ms. Garcia asked Louise to find these expected results.



AND THE SUM IS . . .
(CONTINUED)

13)

	Sum	Number of rolls	Louise thought	Answer
a)	6	72	$\frac{5}{36}$ x 72	___
b)	9	180	$\frac{4}{36}$ x ___	___
c)	11	14	___ x 144	___
d)	7	3600	___ x ___	___

In the library, Louise found a book called 72 Hours at the Crap Table by B. Mickelson. Craps is a game played by rolling a pair of dice and betting on the sum that comes up. The table below shows what actually happened on 14,976 rolls of the dice.

SUM	2	3	4	5	6	7	8	9	10	11	12
ACTUAL ROLLS	402	854	1237	1669	2009	2575	2082	1602	1254	875	417
EXPECTED ROLLS	416	832	1248	1664	2080	2496	2080	1664	1248	832	416

14) Use the probability for getting each sum to find the expected number of sums for the 14,976 rolls. Write your answers in the table. A calculator will make the calculation easier.

$\frac{2}{36}$ X 14,976 ON THE CALCULATOR IS 2 ÷ 36 x 14,976.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________________ **Age** ________
Last First **or**
Grade ________

Content Area General Math ______________ **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to use two-stage tree diagrams to solve word problems.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can choose from the six attached activities problems that will necessitate the student using a two-stage tree diagram to solve. Some of the problems have the tree diagram started. The student, in many cases, will need to make a model of the problem in order to understand the situation. After this is done, she can proceed with the drawing of the two stage tree diagram and the solving of the situation.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test the student will be able to solve word problems using two-stage tree diagrams.

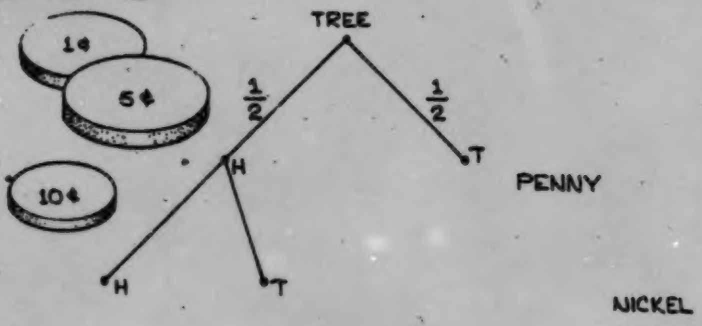
Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** __________ **No** __________ **Date** __________

Teacher: ______________________________________
Signature **Title**

COINS AND KIDS

1) A penny is flipped first, then a nickel, then a dime. How many outcomes are possible? ______



Complete the three-stage diagram to the right to show the outcomes for the three coins. Write the probability of each outcome below the branch.

What are the chances of getting:

a) three heads? ______

b) two heads? ______

c) one head? ______

d) no heads? ______

e) What is the sum of the probabilities in a-e? ______

2) A family has four children. The probability for a boy and the probability for a girl are each 1/2. How many possible outcomes for a family of four children? ______

Draw a tree diagram to show all the possible outcomes.

What is the probability a family with four children has:

a) exactly four girls? ______

b) two girls and two boys? ______

c) all children the same sex? ______

d) only one girl? ______

e) Do these probabilities add to one? ______ Why not?

3) A family has exactly three children. What is the probability that the family has:

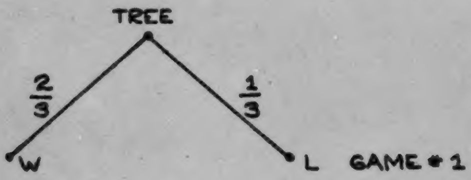
a) three boys? ______

b) two boys? ______

c) one boy? ______

SINK THAT FREE THROW!

I. North Salem and South Salem play each other four times during the regular basketball season. For any one game North's probability of winning is 2/3; South's probability of winning is 1/3.



a) Who do you think is more likely to win the most games? ______

b) For any one game what is North's probability of losing? ______

c) Complete the tree diagram to show all the possible outcomes (Wins and Losses) for North for the four games.

For game #1, North wins with probability 2/3; loses with probability 1/3.

Below each final outcome in the diagram write the probability.

TREE

d) What is the probability

1) North will win all four games? ______

2) each school wins two games? ______

3) South wins three games? ______

II. North and South Salem are to play each other three times during a holiday tournament. One of North's key players is sick and can't play. So for any one game North's probability of winning is 3/5; South's probability of winning is 2/5.

What is the probability

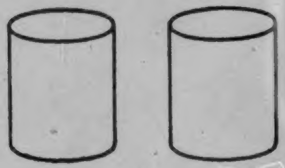
a) North loses all three games? ______

b) South wins two of the three games? ______

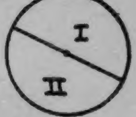
c) North wins two of the three games? ______

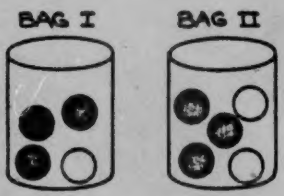
CHANCES ARE

1) Pete has two bags. One contains 3 black marbles and 1 white marble. The other contains 3 black and 2 white. Pete shuffles the bags so Dick can't tell their contents. Dick chooses a bag and draws one marble. What are the chances he draws a white marble?

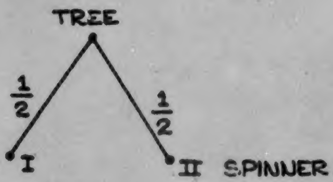


a) To answer the question, imagine Dick spins a spinner to choose the bag. (Each bag has the same chance of being selected.)





b) Dick then draws a marble from the bag. Complete the tree to show the outcomes of drawing a marble. Be sure to write the probability below each outcome.

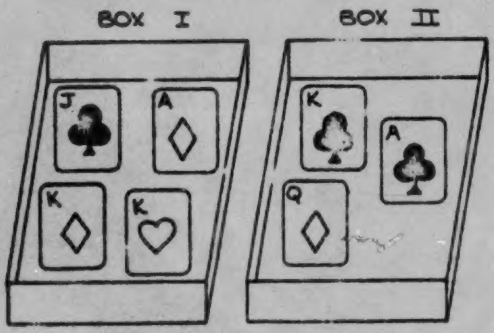


c) Find the probability Dick draws a white marble. ______

Add the probabilities of drawing a white from Bag I or a white from Bag II.

2) Penelope has two bags. One contains 4 black marbles and 3 white marbles. The other contains 2 black and 4 white. Sue chooses a bag and draws one marble. What are the chances she draws a black marble? ______

3)



A coin is tossed to choose Box I or Box II. Without looking, Alan draws a card from the box. What are the chances that Alan draws

a) a Queen (Q)? ______

b) an Ace (A)? ______

c) a club (♣)? ______

d) a King (K)? ______

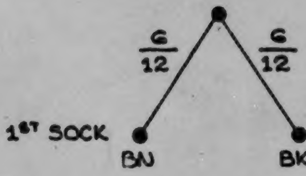
A MATCHED PAIR

Haphazard Hal has 6 identical pairs of socks, except 3 pairs are brown and 3 pairs are black.

Hal never bothers to pair up his socks. He just tosses them into the sock drawer. When he gets up in the morning he is sleepy. He reaches into the drawer and grabs two socks without looking at their color.

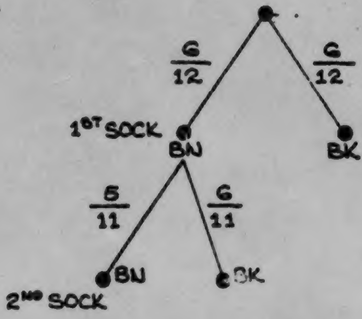
What are the chances Hal gets a pair the same color? (Assume the sock drawer has 6 brown and 6 black socks each morning.)

A tree diagram can help you find the chances. When Hal draws the first sock, the chances of getting a brown sock are $\frac{6}{12}$. The chances of getting a black sock for the first sock are also $\frac{6}{12}$.

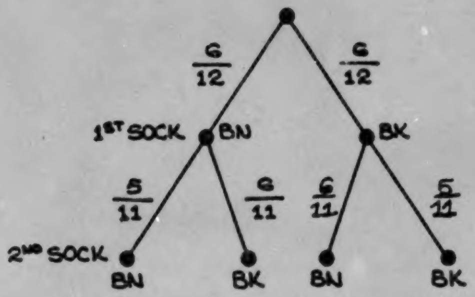


To figure the chances for the second sock we need to know the color of the first sock.

1) Suppose the first sock was brown. There are 11 socks left in the drawer: 5 brown, 6 black. The chances of the second sock being brown are $\frac{5}{11}$. The chances of the second sock being black are $\frac{6}{11}$. These probabilities are shown on the tree.

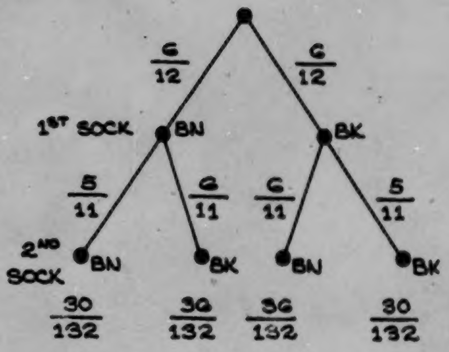


2) Suppose the first sock was black. There are 11 socks left: 6 brown, 5 black. The chances of the second sock being brown are _____ . (Write this probability on the tree.)
The chances of the second sock being black are _____. (Write this probability on the tree.)



A MATCHED PAIR

(CONTINUED)


$\frac{6}{12}$
$\frac{6}{12}$
1ST SOCK
BN
BK
$\frac{5}{11}$
$\frac{6}{11}$
$\frac{6}{11}$
$\frac{5}{11}$
2ND SOCK
BN
BK
BN
BK
$\frac{30}{132}$
$\frac{36}{132}$
$\frac{36}{132}$
$\frac{30}{132}$

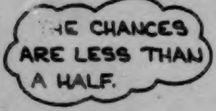
*To find the chances of getting a brown and then a brown, multiply $\frac{6}{12} \times \frac{5}{11} = \frac{30}{132}$.

The chances of getting a brown and then a black, $\frac{6}{12} \times \frac{6}{11} = \frac{36}{132}$.

The chances of getting a black and then a brown, $\frac{6}{12} \times \frac{6}{11} = \frac{36}{132}$.

*The chances of getting a black and then a black, $\frac{6}{12} \times \frac{5}{11} = \frac{30}{132}$.

To find the chances that Hal gets a matched pair add* $\frac{30}{132} + \frac{30}{132} = \frac{60}{132}$.

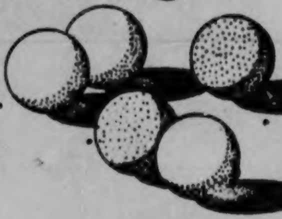

THE CHANCES
ARE LESS THAN
A HALF.

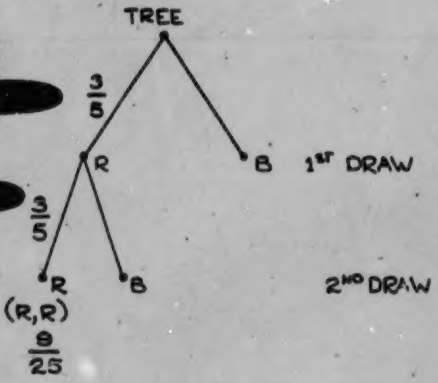
1) Suppose Hal has 4 brown socks and 4 black socks. These are haphazardly arranged in the drawer. Hal grabs two socks. What are the chances he gets a matched pair? _______
Not a matched pair? _______
(Use the method described above. Draw a tree diagram and find the probabilities on each branch.)

2) Now suppose Hal has 4 brown socks and 6 black socks. What are the chances he gets a matched pair? _______ Are his chances better than in #1? _______
What are his chances of not getting a matched pair? _______

marble problems

1) A bag has 3 red marbles and 2 black marbles. You draw one marble, look at it, put it back. Then you draw one marble again.





a) What are your chances of getting two black marbles? _____

To help you answer, complete the tree diagram to the right. Be sure to write the missing probabilities on the branches.

b) What are your chances of getting one or more black marbles in the two draws? _______

TREE

2) A bag has 4 red marbles and 3 black marbles. You draw one marble, look at it, put it back. Then you draw one marble again.

Draw a tree diagram to help you. Write the probability below each outcome.

What are your chances of getting:

a) two black marbles? ______

b) no black marbles? ______

c) only one red marble? ______

3) A bag has 3 red marbles, 2 white marbles and 1 blue marble. You draw one marble, look at it, put it back. Then you draw one marble again.

TREE

What are your chances of getting:

a) two white marbles? ______

b) only one white marble? ______

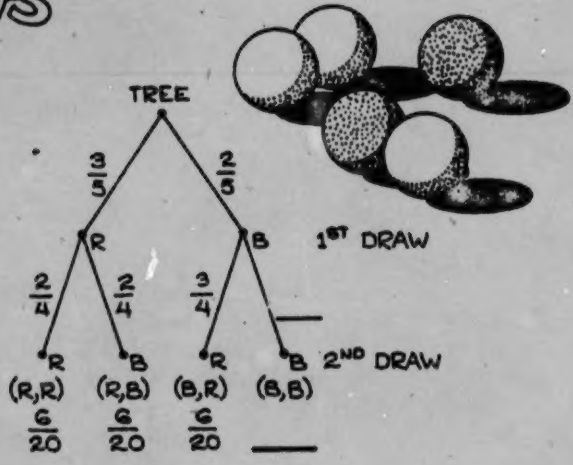
c) no white marbles? ______

d) two marbles the same color? ______

Hint: both white or both red or both blue

more marble problems

1) A bag has 3 red marbles and 2 black marbles. You draw one marble, look at it, and do not put it back. Then you draw another marble.



a) What are your chances of drawing two black marbles? ______

Study the tree carefully. There are only four marbles left after the first draw. Write the missing probability on the branch to complete the diagram.

b) What are your chances of getting one or more black marbles in the two draws? ______

2) A bag has 4 red marbles and 3 black marbles. You draw one marble, look at it and do not put it back. Then you draw another marble.

TREE

What are your chances of getting:

a) two black marbles? ______

b) no black marbles? ______

c) only one red marble? ______

Draw a tree diagram to help you.

3) A bag has 3 red marbles, 2 white marbles and 1 blue marble. You draw one marble, look at it and do not put it back. Then you draw another marble.

TREE

What are your chances of getting:

a) two white marbles? ______

b) only one white marble? ______

c) no white marbles? ______

d) two blue marbles? ______

e) two marbles the same color? ______

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** ________
Last First **or**
Grade ________

Content Area General Math **Skills List No.** __________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to draw two-stage tree diagrams.

Activities: **What will be done, when, how much (time), by whom?**

The attached activities, Two-Stage Trees, I, II, III, are good activities for the teacher to use to introduce the student to find the probability of two things happening independently.

As the student goes through the activities, he will find that the probability of one thing occuring is pretty good, but that one thing happening in conjunction with another is much less. The student needs to be aware that in some situations, an outcome might be duplicated, which means their probability can be added. As the student becomes more confident, the process of finding the probability by multiplying can be introduced.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to draw two-stage tree diagrams.

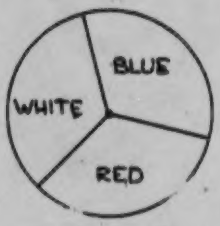
Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** ________ **No** ________ **Date** ________

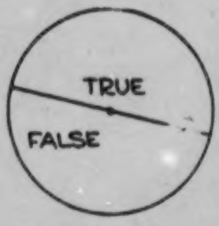
Teacher: ______________________________
Signature **Title**

TWO-STAGE TREES I

Suppose you have the two spinners to the right. Each is spun once. What is the probability of first getting Blue on Spinner I and then getting True on Spinner II? A tree diagram can help you answer this question.

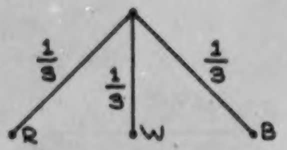

BLUE
WHITE
RED

SPINNER I

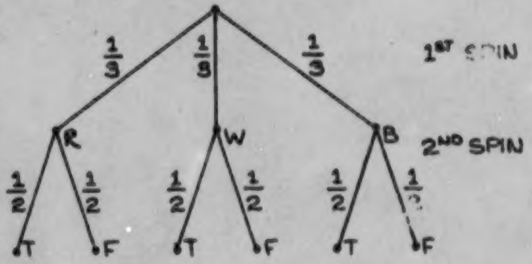


SPINNER II

1) Draw a tree diagram for Spinner I. Since each color has the same chance of occurring the probability for each branch is 1/3.

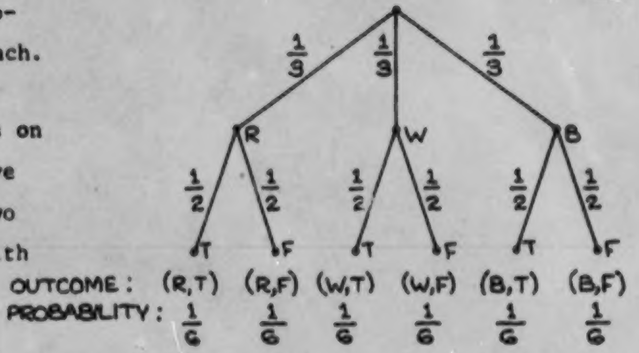


2) Suppose the pointer of Spinner I lands on Red. When Spinner II is spun, True or False have the same chance of occurring. The probability of each is 1/2. Draw two brances at the end of the R-branch to show this.


1/3
1/3
1/3
1ST SPIN
R
W
B
2ND SPIN
1/2
1/2
1/2
1/2
1/2
1/2
T
F
T
F
T
F

3) Suppose the pointer of Spinner I lands on White. Again the pointer of Spinner II has the same chance of landing on True or False. Draw two branches with probabilities 1/2 at the end of the W-branch.

4) Suppose the pointer of Spinner I lands on Blue. Both outcomes of Spinner II have the same chance of occurring. Draw two branches at the end of the B-branch with probabilities 1/2.


1/3
1/3
1/3
R
W
B
1/2
1/2
1/2
1/2
1/2
1/2
T
F
T
F
T
F
OUTCOME: (R,T) (R,F) (W,T) (W,F) (B,T) (B,F)
PROBABILITY: 1/6 1/6 1/6 1/6 1/6 1/6

5) The two-stage tree has six outcomes: (R,T), (R,F), (W,T), (W,F), (B,T), (B,F). Each has the same chance of occurring so the probability of each is 1/6.

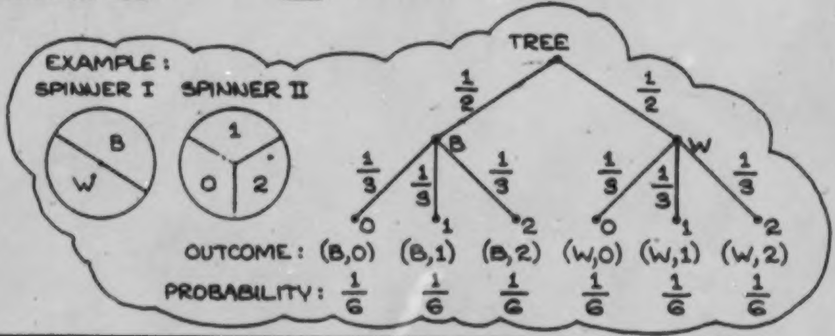
(R,T) means the pointer of Spinner I is on Red and the pointer of Spinner II is on True.

If each spinner is spun once, the probability of getting Blue on Spinner I and True on Spinner II is 1/6.

TWO-STAGE TREES I (CONTINUED)

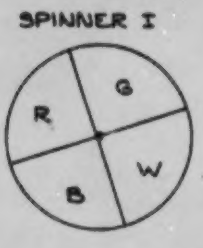
Both spinners in exercises 1-3 are spun once. Draw two-stage tree diagrams to show the outcomes of the two spins.

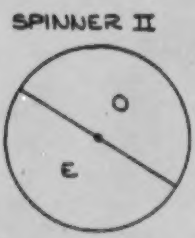
a) Write the probabilities on each branch of the trees.
b) Write the outcomes below the branches.
c) Write the probability for each outcome.


EXAMPLE:
SPINNER I
SPINNER II
B
W
1
0
2
TREE
1/2
1/2
B
W
1/3
1/3
1/3
1/3
1/3
1/3
0
1
2
0
1
2
OUTCOME: (B,0) (B,1) (B,2) (W,0) (W,1) (W,2)
PROBABILITY: 1/6 1/6 1/6 1/6 1/6 1/6

1.

TREE

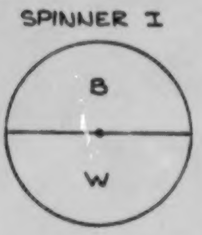

SPINNER I
R
G
B
W

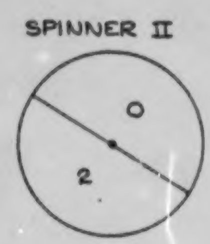

SPINNER II
O
E

What is the probability of getting (B,E)? ______

2.

TREE

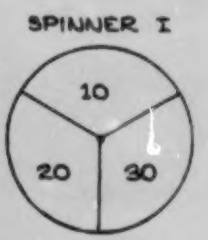

SPINNER I
B
W

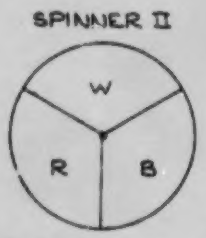

SPINNER II
O
2

What is the probability of getting (W,2)? ______

3.

TREE


SPINNER I
10
20
30

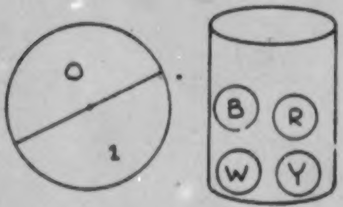

SPINNER II
W
R
B

What is the probability of getting (30,R)? ______

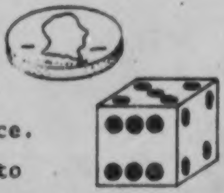
TWO-STAGE TREES II

TREE

1) The spinner is spun once and then a marble is drawn from the bag. Draw a two-stage tree to show the outcomes. What is the probability of getting a zero on the spinner and a red marble from the bag? _______



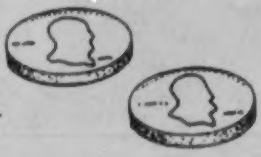
TREE



2) A coin is flipped once and a die is rolled once. Draw a two-stage tree to show the outcomes. What is the probability of getting a tail and a six? _______

TREE

3) Each coin is flipped once. Draw a two-stage tree to show the outcomes. What is the probability of getting two heads? _______ What is the probability of getting one head and one tail? _______ -- CAREFUL

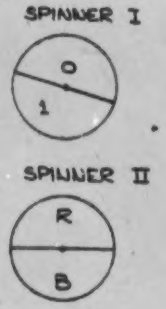


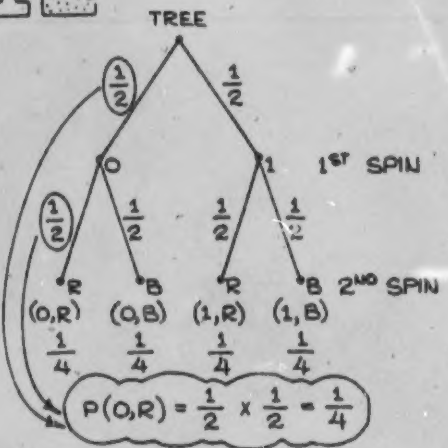
4) One coin is flipped twice. Do you see how your tree diagram in #3 can be used to show the outcomes? What is the probability of getting two tails? _______

TWO-STAGE TREES III

To find the probability of a single outcome on a two-stage tree, you can multiply the probabilities on both branches leading to the outcome.

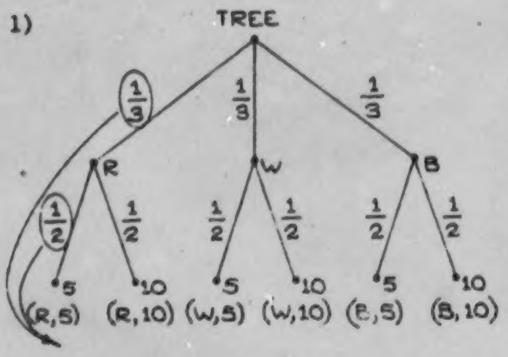
To find the probability of 0 on Spinner I and Red on Spinner II, multiply $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$.


SPINNER I
0
1
SPINNER II
R
B


TREE
1/2
1/2
0
1
1ST SPIN
1/2
1/2
1/2
1/2
R
B
R
B
2ND SPIN
(0,R)
(0,B)
(1,R)
(1,B)
1/4
1/4
1/4
1/4
P(0,R) = 1/2 x 1/2 = 1/4

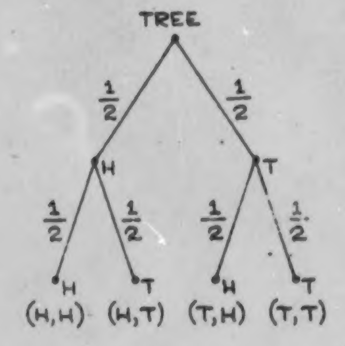
Study each diagram below. Multiply the probabilities on both branches to find the probability of a single outcome. Find and write the probability below each outcome.

1)


TREE
1/3
1/3
1/3
R
W
B
1/2
1/2
1/2
1/2
1/2
1/2
5
10
5
10
5
10
(R,5)
(R,10)
(W,5)
(W,10)
(B,5)
(B,10)

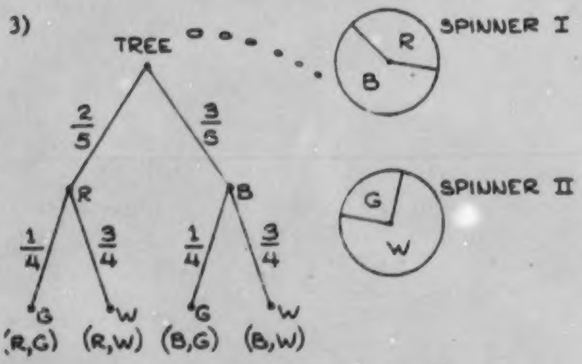
____ ____ ____ ____ ____ ____

2)


TREE
1/2
1/2
H
T
1/2
1/2
1/2
1/2
H
T
H
T
(H,H)
(H,T)
(T,H)
(T,T)

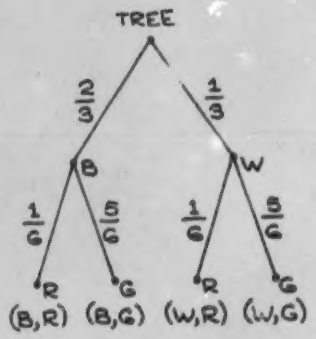
____ ____ ____ ____

3)


TREE
SPINNER I
R
B
2/5
3/5
R
B
SPINNER II
G
W
1/4
3/4
1/4
3/4
G
W
G
W
(R,G)
(R,W)
(B,G)
(B,W)

____ ____ ____ ____

4)


TREE
2/3
1/3
B
W
1/6
5/6
1/6
5/6
R
G
R
G
(B,R)
(B,G)
(W,R)
(W,G)

____ ____ ____ ____

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ______________________________ **Age** ________
Last **First** **or**
Grade ________

Content Area General Math **Skills List No.** ____________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to draw a tree diagram to solve word problems.

Activities: **What will be done, when, how much (time), by whom?**

The student will discover that this is an application of the process of solving probability problems. The teacher can use the attached activity, Probability Problems To Pursue, to get the student acquainted with the process. The teacher can help the student make a diagram, a model, of the situation described in the problem. Then the student will discover that she needs to make a diagram to find the probability.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to solve word problems using tree diagrams.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ________ **No** ________ **Date** ____________

Teacher: ______________________________
Signature **Title**

PROBABILITY PROBLEMS TO PURSUE

For each situation, draw a tree diagram to show the probability of each outcome. Use the tree diagram to answer the question.

1) A bag contains 4 red, 3 green and 2 yellow marbles. A marble is picked at random. What is the probability of picking

TREE

a) a green marble? _______

b) a green or red marble? _______

c) neither a green nor a red marble? _______

2) There are 10 slips of paper in a hat. The slips are numbered from 1 through 10. One slip is drawn at random from the hat. What is the probability that the slip has

TREE

a) a 5 on it? _______

b) a number greater than 6? _______

c) an even number on it? _______

d) a number evenly divisible by 3? _______

3) Mr. Jacobs has 14 good eggs and 4 rotten eggs lying on the counter. His wife puts the eggs together and places them in the refrigerator. Mr. Jacobs chooses one at random. What is the probability he picks a good egg? _______

TREE

4) One letter of the word "statistician" is selected at random. What is the probability the letter is

TREE

a) "t"? _______

b) "a"? _______

c) a vowel? _______

d) a consonant? _______

5) In Olivia's class, 2 students have red hair, 4 have black hair, 6 have blond hair and 12 students have brown hair. One student is chosen at random. What is the probability the student has

TREE

a) blonde hair? _______

b) not red hair? _______

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ District: ____________ Area ____________

For Dates ____________ to ____________

Student Name ______________________ Age ________
Last First or
Grade ________

Content Area General Math Skills List No. 603

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to use sampling to predict probability.

Activities: What will be done, when, how much (time), by whom?

The attached activity, Cards In A Hat, is a good activity to introduce the concept of using sampling to predict probability. As the student goes through the activity, the teacher can discuss with the student the concept of why sampling is used, and why it should give valid results.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to predict probability by using sampling.

Total Days Participation ____________ out of a possible ____________

Criterion Attained: Yes ________ No ________ Date ________

Teacher: ______________________
Signature Title

CARDS IN A HAT

Materials: Package of file cards
Hat (Can)

1) Count out 10 cards.

   Letter 2 of them with an x. Letter 5 of them with a y. Letter 3 of them with a z. Mix them up and put them in the hat.

   Think about drawing a single card from the hat.

   The probability that this card would be an x is 2/10.

   What is the probability that this card would be:

   a) y? b) z?

2) Now do the experiment below to see how close your results are to the probabilities listed above.

   a) Select a card. Record its letter. Put it back in the hat. Shake the hat.
   b) Perform the experiment a total of 40 times.
   c) Is the ratio of x's to 40 close to 2/10? ________
   d) Write about your results. Do you think you took a large enough sample? Discuss this with your teacher.

3) Remove the cards from the hat. Secretly change some of the letters so that the probabilities are different. Don't introduce any new letters. Keep only x's, y's and z's.

   Now see if your partner can determine the new probabilities.

4) Repeat the steps given in Exercise 3.

   This time, you draw cards out of the hat after your partner secretly changes some of the letters.

EXTENSION: Put 5 cards in the hat: 2 x's and 3 y's. Guess the probability of selecting 2 cards and getting

a) both x's b) both y's c) one of each.

Now conduct an experiment to check your guesses. Write about your experiment.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area General Math **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the probability for outcomes.

Activities: What will be done, when, how much (time), by whom?

The two attached activities, Finding Probabilities I & II, are good activities for the teacher to use to guide the student through the process for finding the probabilities for outcome. The student will discover the notation for probability as he works through the exercise. The teacher may have to explain the meaning of P(Not 8) on the first example. It means the probability of any number except 8 from the spinner. As the student gets more confident with the process, he may find that he no longer needs to make the tree to find the probability.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the probability for outcomes.

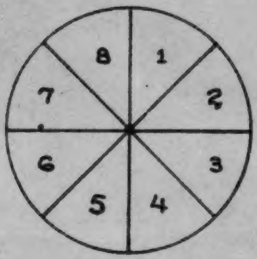
Total Days Participation ______________ **out of a possible** ______________

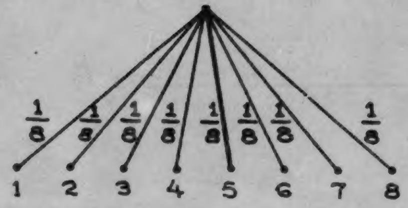
Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

FINDING PROBABILITIES
I

Suppose the spinner is spun once.
The pointer has the same chance of
landing on each numbered region.
(If the pointer stops on a line,
it does not count and is spun again.)





The tree diagram shows the
probability of landing on a 5 is 1/8. We write P(5) = $\frac{1}{8}$.

1. Fill in the probabilities below for one spin of the spinner.
   - a) P(2) = ______
   - b) P(8) = ______
   - c) P(2 or 8) = ______ P(2) + P(8)
   - d) P(7 or 6) = ______
   - e) P(odd number) = ______
   - f) P(even number) = ______
   - g) P(number is greater than 4) = ______
   - h) P(number is less than 4) = ______
   - i) P(number is greater than 7) = ______
   - j) P(1 or 2 or 3 or 4 or 5 or 6 or 7 or 8) = ______

2. Use the tree diagram above to fill in the probabilities for one spin of the spinner.
   - a) P(8) = ______
   - b) P(not 8) = ______
   - c) P(4) = ______
   - d) P(not 4) = ______
   - e) P(4 or not 4) = ______
   - f) P(13) = ______
   - g) P(not even) = ______
   - h) P(even or odd) = ______

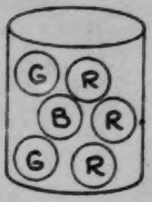
IF AN EVENT CANNOT OCCUR ITS PROBABILITY IS ZERO.

3. The probabilities are for one spin of the above spinner. Use the tree diagram to select an outcome that has each probability. e.g., P(7 or 6 or 5) = $\frac{3}{8}$
   - a) P(____________) = $\frac{1}{8}$
   - b) P(____________) = $\frac{2}{8}$ or $\frac{1}{4}$
   - c) P(____________) = $\frac{1}{2}$
   - d) P(____________) = $\frac{7}{8}$
   - e) P(____________) = 1
   - f) P(____________) = 0

FINDING PROBABILITIES
II

I.

1) One marble is drawn. Draw a tree diagram to show the probability of each outcome



TREE

2) Use the tree to fill in the probabilities for a draw of one marble.

P(B) = ____ P(R) = ____ P(B or G or R) = ____

P(not R) = ____ P(Y) = ____

II.

1) A fair coin is flipped once. Draw a tree diagram to show the probability of each outcome.

TREE

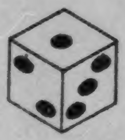
2) Fill in the probabilities for one flip of the coin.

P(H) = ____ PROBABILITY OF A HEAD. P(T) = ____

P(H or T) = ____ P(not T) = ____

III.

1) A fair die is rolled once. Draw a tree diagram to show the probability of each outcome.



TREE

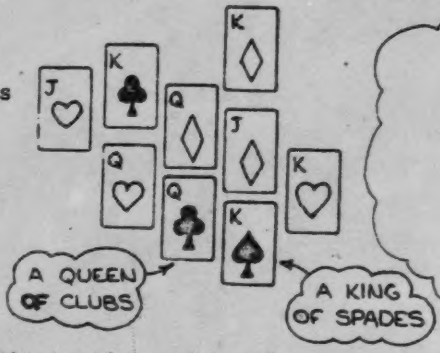
2) Fill in the probabilities for one roll of the die.

P(⚀) = ____ P(⚃) = ____ P(⚅ or ⚄) = ____ P(not ⚂) = ____

P(⚅) = ____ P(⚀ or ⚁ or ⚂ or ⚃ or ⚄ or ⚅) = ____

IV.

1) A card is chosen at random from this group. Draw a tree diagram to show the probability of drawing each card.



TREE

2) Fill in the probabilities for a draw of one card.

P(J♡) = ____ P(K) = ____ PROBABILITY OF A KING P(◇) = ____ P(not ♣) = ____

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** __________

For Dates ______________ **to** ________________

Student Name ____ **Age** __________
Last **First** **or**
Grade ________

Content Area General Math **Skills List No.** ____________________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to use probability to make choices.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the two attached activities, One Million and Take Your Choice to develop the ability of the student to analyze and make decisions based on a particular situation. As the student goes through the activity the teacher will be able to discuss with the student the situations where she is having difficulties in an attempt to eliminate the problems in faulty logic.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

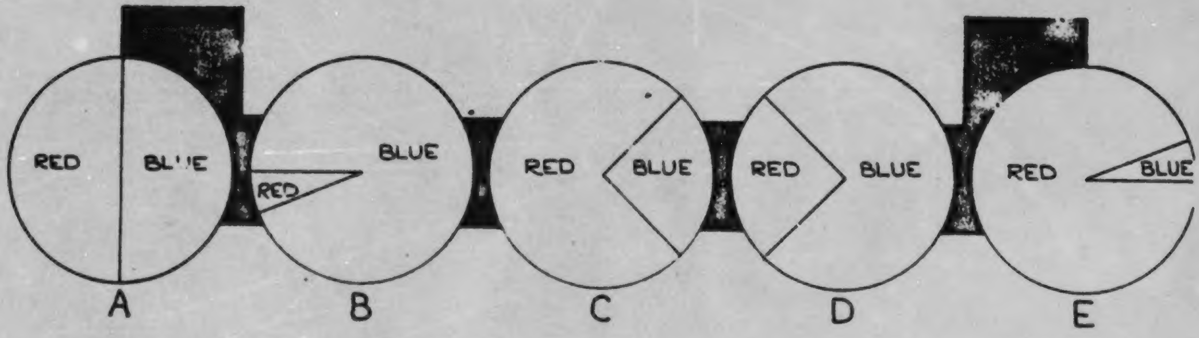
Given a teacher made test, the student will be able to make choices using probability.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: **Yes** __________ **No** __________ **Date** ______________

Teacher: ____
Signature **Title**

ONE $MILLION



In each pair below circle the letter of the spinner that will more likely show red than blue.

1) B or E
2) C or A
3) E or C
4) A or D
5) B or C
6) B or D

Suppose a rich person (Money Bags) will give you $1,000,000 if you can get red on one spin of a spinner.

7) Which spinner would you choose? __________

8) Which spinner would Money Bags choose for you to use if she didn't want you to win? __________

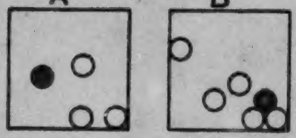
9) If you could make your own spinner, how would you color it? __________

10) If Money Bags could make a spinner for you and didn't want you to win, how would she color the spinner? __________

TAKE YOUR CHOICE

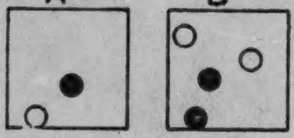
Each box has some black and some white marbles. A person chooses one box from each pair and draws one marble. The person wins if the marble is black. Which box in each pair gives the best chance of winning? Circle your choice.

A B

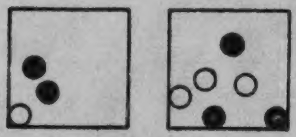
1) 

BOX A
BOX B
SAME CHANCE

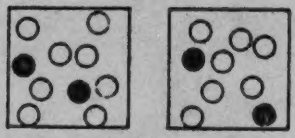
A B

2) 

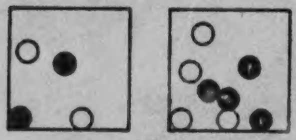
BOX A
BOX B
SAME CHANCE

3) 

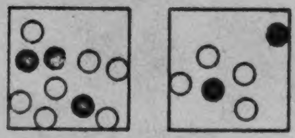
BOX A
BOX B
SAME CHANCE

4) 

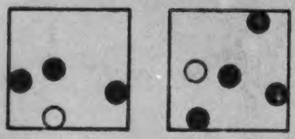
BOX A
BOX B
SAME CHANCE

5) 

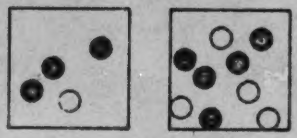
BOX A
BOX B
SAME CHANCE

6) 

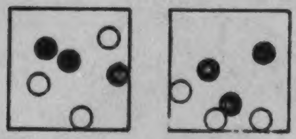
BOX A
BOX B
SAME CHANCE

7) 

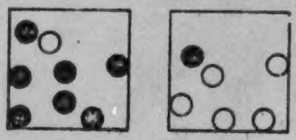
BOX A
BOX B
SAME CHANCE

8) 

BOX A
BOX B
SAME CHANCE

9) 

BOX A
BOX B
SAME CHANCE

10) 

BOX A
BOX B
SAME CHANCE

11) Get two boxes. Pick one of experiments 3, 4, 6 or 7. Put the correct marbles in each box.

a) Without looking pick a marble from box A. Record the color. Put the marble back in the box. Shake the box.

b) Repeat 24 more times.

c) Without looking pick a marble from box B. Record the color.

d) Repeat 24 more times.

e) Does the experiment agree with your choice?

f) Would you like to change your choice?

BOX	BLACK	WHITE
A		
B		

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ____ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to match one-stage trees to spinners and containers.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, South Of The Border will allow the student to assure himself of the concept of tree diagrams and what they represent. As the student completes the exercise, he will have to be able to use the concept of building a mathematical model.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to match one-stage trees to spinners and containers.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

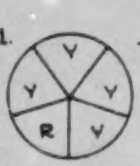
Teacher: ____
Signature **Title**

SOUTH OF THE BORDER

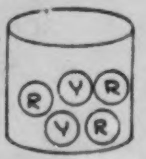
Each spinner or container can be matched with a tree diagram. Some diagrams show the probability of the pointer landing on each color for one spin of a spinner. Others show the probability of drawing a marble of each color for a one-marble draw.

Write the letter of the correct tree diagram beside the spinner or container. Then fill in the answer blanks at the bottom of the page to find out what happened on a South American plantation on November 21, 1977.

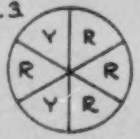
___ 1.



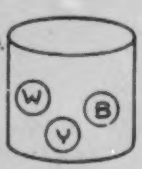
___ 2.



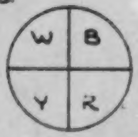
___ 3.



___ 4.



___ 5.



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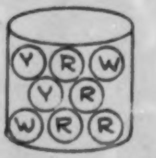
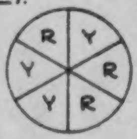
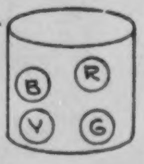


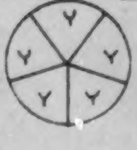
___ 7.



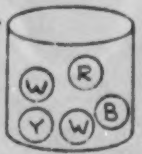
___ 8.



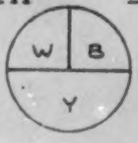
___ 9.



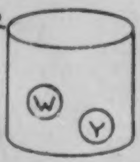
___ 10.



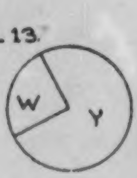
___ 11



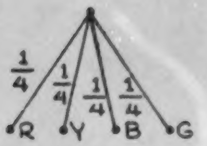
___ 12.



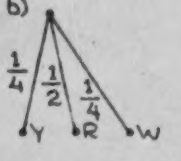
___ 13.



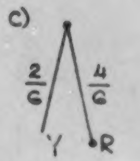
a)


1/4
1/4
1/4
1/4
R
Y
B
G

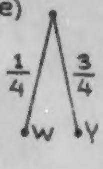
b)



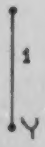
c)



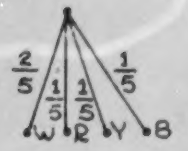
e)



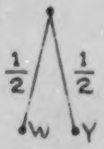
g)



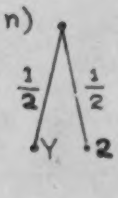
h)


2/5
1/5
1/5
1/5
W
R
Y
B

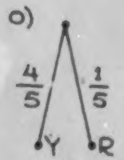
l)



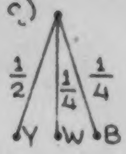
n)



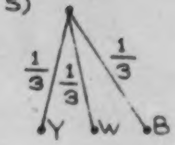
o)



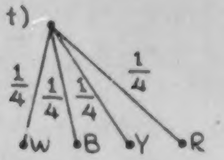
c)



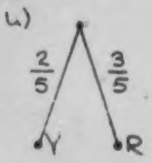
s)



t)


1/4
1/4
1/4
1/4
W
B
Y
R

u)



3	10	12	11	2	12	5	8	9	1	13	4	6	8	7	8	7	8	4

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ (Last) ______________ (First) **Age** ______ **or Grade** ______

Content Area General Math **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to draw one-stage tree diagrams for outcomes not equally likely.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, Tree Diagrams III, IV & V, to demonstrate the chance for outcomes not being equally likely. The student will notice that each event is equally likely, but since certain colors are found more than once, the chance of a particular color occurring is not. As the student goes through the activity she will become more acquainted with the concept of probability and will develop the process of being able to make the mathematical model of the event taking place.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to draw one-stage tree diagrams for outcomes not equally likely.

Total Days Participation ______________ **out of a possible** ______________

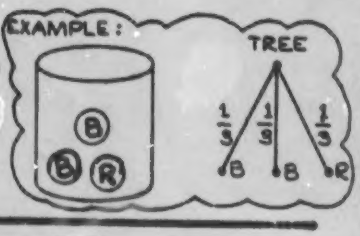
Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ (Signature) ______________ (Title)

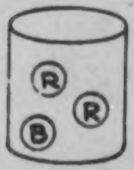
TREE DIAGRAM

III

In exercies #1-4, sketch a tree diagram to show the probability of drawing each marble from a container. Be sure to write the probability on each branch.

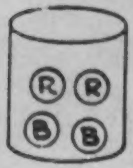


1)



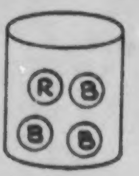
TREE

2)



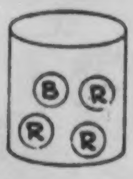
TREE

3)



TREE

4)



TREE

5a) What is the probability of drawing a blue marble from container #1? ______

b) What is the probability of drawing a red marble from container #1? ______

THE PROBABILITY OF DRAWING EACH MARBLE IS 1/3. THE PROBABILITY OF DRAWING A RED MARBLE IS 1/3 + 1/3 = 2/3.

6) Write the probabilities for these drawings:

a) A blue marble from container #2 ______

b) A red marble from container #2 ______

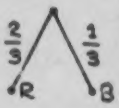
c) A blue marble from container #3 ______

d) A red marble from container #3 ______

e) A blue marble from container #4 ______

f) A red marble from container #4 ______

7) Because there are two colors in each container a two-branch tree can be used to show the probability of drawing a red or a blue marble from the containers. For container #1, the tree is: → Sketch two-branch trees below to show the probability of drawing a marble of either color from each of the containers.



Container #2:

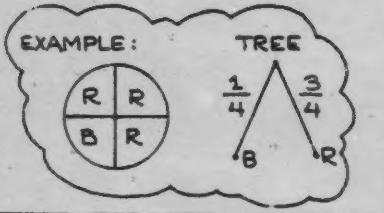
Container #3:

Container #4:

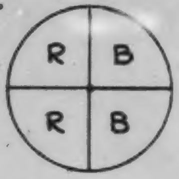
TREE DIAGRAM

V

Each spinner is to be spun once. Draw a tree diagram to show the probability of the pointer landing on each color.

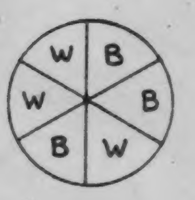

EXAMPLE:
R
R
B
R
TREE
1/4
3/4
B
R

1.



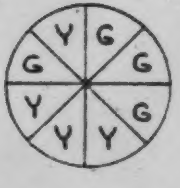
TREE

2.



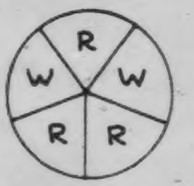
TREE

3.



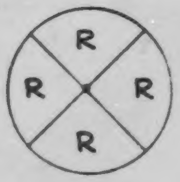
TREE

4.



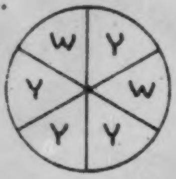
TREE

5.



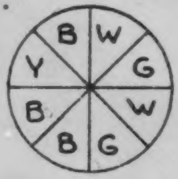
TREE

6.



TREE

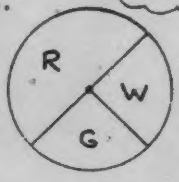
7.



TREE

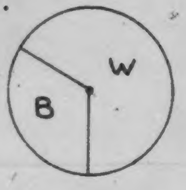
8.

CAREFUL



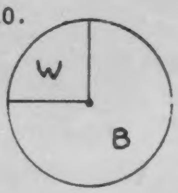
TREE

9.



TREE

10.

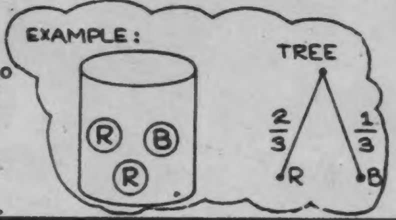


TREE

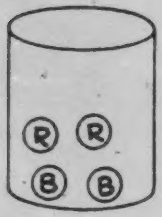
TREE DIAGRAM

IV

For each container, draw a tree diagram to show the probability of drawing a marble of each color.


EXAMPLE:
R
B
R
TREE
$\frac{2}{3}$
$\frac{1}{3}$
R
B

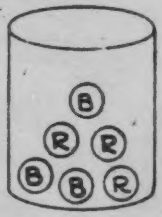
1.



TREE

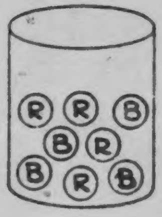
Draw a two-branch tree.

2.



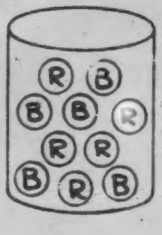
TREE

3.



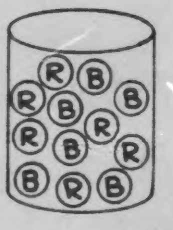
TREE

4.


R B
B B R
R R
B R B

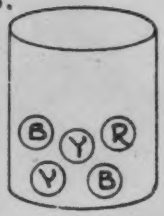
TREE

5.


R B
R B B
R R
B R
B R B

TREE

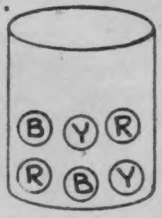
6.



TREE

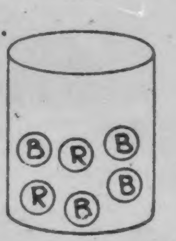
Draw a three-branch tree.

7.



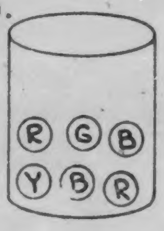
TREE

8.



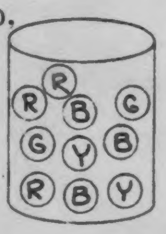
TREE

9.



TREE

10.


R
R B G
G Y B
R B Y

TREE

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ ______________ **Age or Grade** ______________
Last First

Content Area General Math **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to draw a one-stage tree diagram with equally likely outcomes.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activities, Tree Diagrams I & II, to demonstrate the chances of equally likely events happening. As the student goes through the activity, he will become acquainted with the concept of probability and will develop the process of being able to make the mathematical model of the event taking place.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to draw one-stage tree diagrams for equally likely outcomes.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

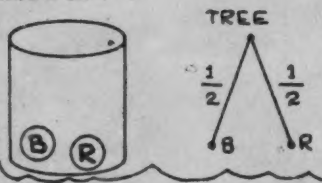
Teacher: ______________ ______________
Signature Title

TREE DIAGRAM

I

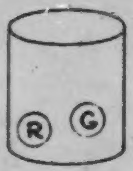
In problems #1-10, sketch a tree diagram to show the probability of drawing each marble from the container. Write the probability on each branch.

EXAMPLE :


TREE
$\frac{1}{2}$
$\frac{1}{2}$
B
R
B
R

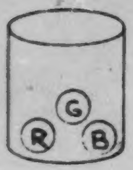
Since each marble has the same chance of being selected the probabilities are equal.

1.



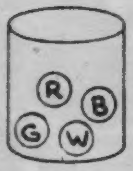
TREE

2.



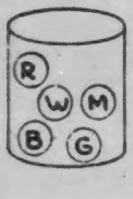
TREE

3.

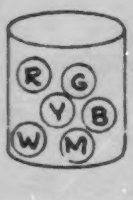


TREE

4.



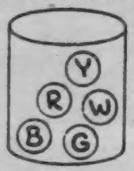
TREE



TREE

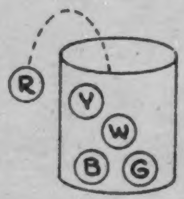
Note: Exercises 6-10 are all about the same container.

6.



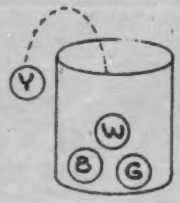
TREE

7. A red marble is drawn.



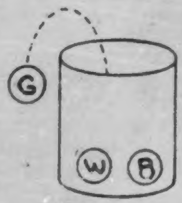
TREE

8. A yellow marble is drawn.



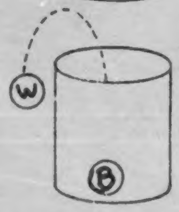
TREE

9. A green marble is drawn.



TREE

10. A white marble is drawn.



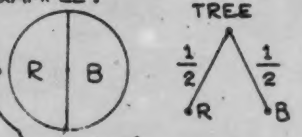
TREE

Now sketch the tree to show the probability of drawing the remaining marbles from the container.

TREE DIAGRAM
II

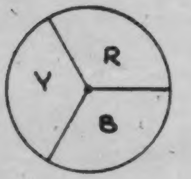
Each spinner is to be spun once. Draw a tree diagram to show the probability of the pointer landing in each region. Assume the pointer doesn't stop on a line.

EXAMPLE:


R
B
TREE
$\frac{1}{2}$
$\frac{1}{2}$
R
B

Since the regions are the same size the probabilities are equal.

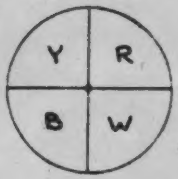
1.



TREE

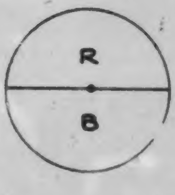
Be sure to write the probability on each branch!

2.



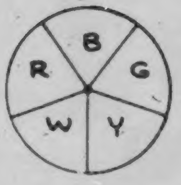
TREE

3.



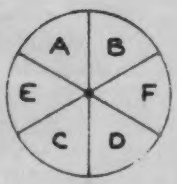
TREE

4.



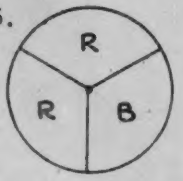
TREE

5.



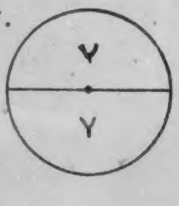
TREE

6.



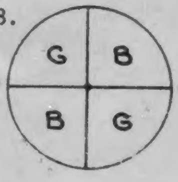
TREE

7.



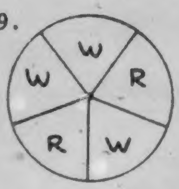
TREE

8.



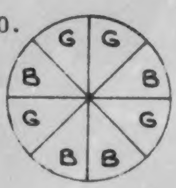
TREE

9.



TREE

10.



TREE

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________________ **District:** ____________________ **Area** ____________

For Dates ______________ to ______________

Student Name ________________________________ **Age** ________
Last First or
Grade ________

Content Area General Math **Skills List No.** ________________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to relate the chance of an event to a probability scale.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, Maybe Yes, Maybe No, is a good introduction of the concept of chance. The teacher can help the student discover that events have varying chances of occurring. These chances vary from never to always. The student will also be exposed to a probability scale ranging from 0 to 1. As the student goes through the activity, he will be able to discover many of the ideas of chance.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

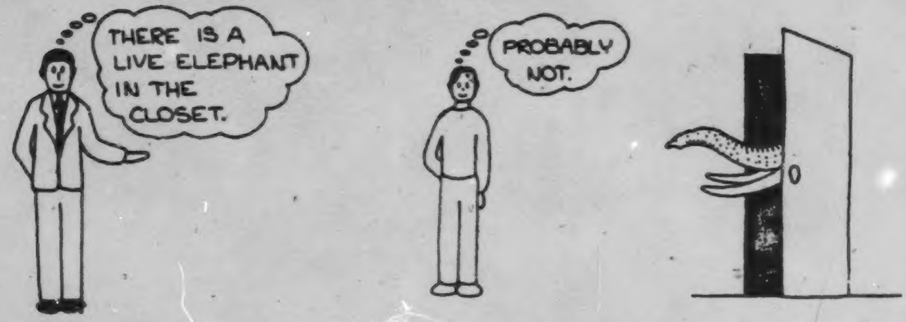
Given a teacher made test, the student will be able to relate chances to a probability scale.

Total Days Participation ______________ out of a possible ____________________

Criterion Attained: Yes ____________ No ____________ Date ______________

Teacher: ____
Signature Title

MAYBE YES
MAYBE NO


THERE IS A LIVE ELEPHANT IN THE CLOSET.
PROBABLY NOT.

WHAT IS THE CHANCE OF EACH OF THESE EVENTS OCCURRING? WRITE ONE OF THESE FIVE ANSWERS.

NEVER PROBABLY NOT MAYBE YES - MAYBE NO PROBABLY ALWAYS

1) YOU WILL GROW ANOTHER HEAD. ____________

2) YOU WILL GET A "TAIL" WHEN YOU FLIP A COIN. ____________

3) YOU HAVE A HEART. ____________

4) YOU WILL TAKE A SPACE TRIP TO THE MOON. ____________

5) YOU WILL EAT SUPPER TONIGHT. ____________

6) YOU WILL GET A "HEAD" WHEN YOU FLIP A COIN. ____________

7) YOU WILL GET A "TWO" WHEN YOU ROLL A DIE. ____________

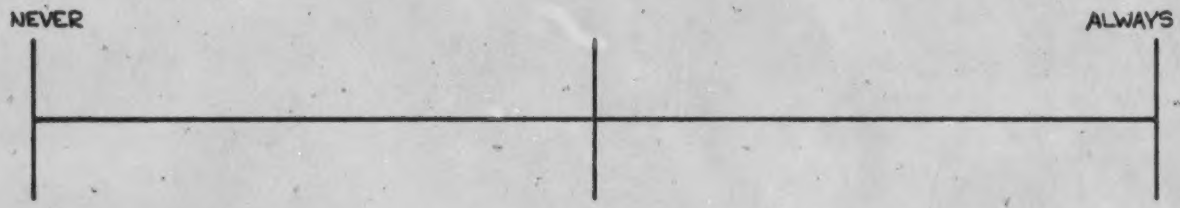
8) YOU WILL GET OLDER. ____________

9) YOU WILL GET A NUMBER GREATER THAN "TWO" WHEN YOU ROLL A DIE. ____________

10) YOU WILL SEE A LIVE DINOSAUR AT THE ZOO. ____________

MAYBE YES
MAYBE NO
(CONTINUED)

Mathematicians use a probability line to show the chance of an event. In the appropriate places write the numbers of the exercises on the previous page along this probability line.



An event that can never happen has a probability of 0.

An event that has the same chance of happening or not happening has a probability of $\frac{1}{2}$.

11) What do you think is the probability of an event that

a) always happens? ____________

b) probably happens? ____________

c) probably does not happen? ____________

Write the number of each exercise below in the appropriate place on the probability line.

12) You will live to be 100 years old.

13) You will draw the Ace of clubs from a regular deck of cards.

14) You will get an A in math class.

15) You will draw a red card from a regular deck of cards.

16) You will watch television today.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area General Math **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to count letter arrangements using trees.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, Yes, Three Letters Please, is a good one to begin the process of thinking about counting techniques. As the student goes through the process, she can begin to draw inferences about the logical conclusion of the process.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to count letter arrangements using trees.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

YES, THREE LETTER WORDS, PLEASE

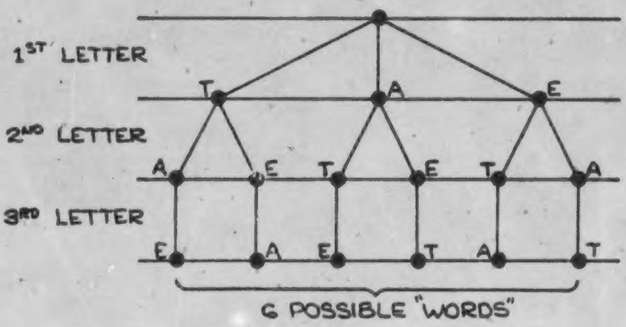
1) On the board, draw and number three blanks. ________ ________ ________
1 2 3

2) With your own chips and container demonstrate how to mix the chips; pick one chip; fill in the first blank with the letter on the chip; pick a second chip; fill in the second blank; pick the third chip; and fill in the third blank. A chip is not to be replaced after it is picked.

3) Have each student draw two sets of blanks and do the experiment twice.

4) On the board, record the results. If the experiment is done many times, the six "words" should occur about the same number of times. TAE, TEA, ATE, AET, EAT, ETA Interestingly, only TAE is not listed in Webster's New Collegiate Dictionary. AET is an abbreviation meaning aged. ETA is the seventh letter of the Greek alphabet.

5) Ask if any more words can be formed. Students will probably think they have all the words. Use a tree diagram to show the six possible words. Build the tree one step at a time. Trace along a branch. Have students identify the word.



With only one example, it is best not to have students relate the total number of words to the number of letters. Later the fundamental counting principle can be introduced.

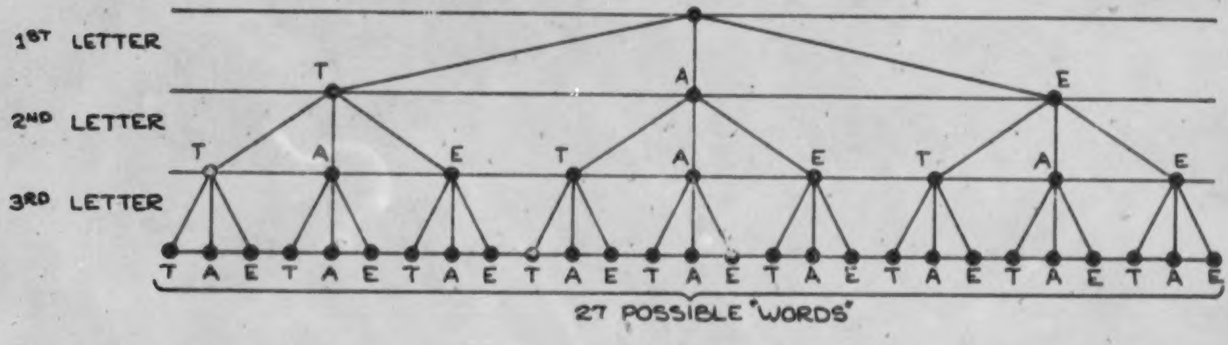
> *To find the number of ways of making several decisions in succession, multiply the number of choices that can be made in each decision.*

In the example above, the number 6 is obtained by multiplying 3 x 2 x 1, but 3 + 2 + 1 is also 6. Students might think of adding instead of multiplying. With 4 chips, 4 x 3 x 2 x 1 words are possible but not 4 + 3 + 2 + 1 words.

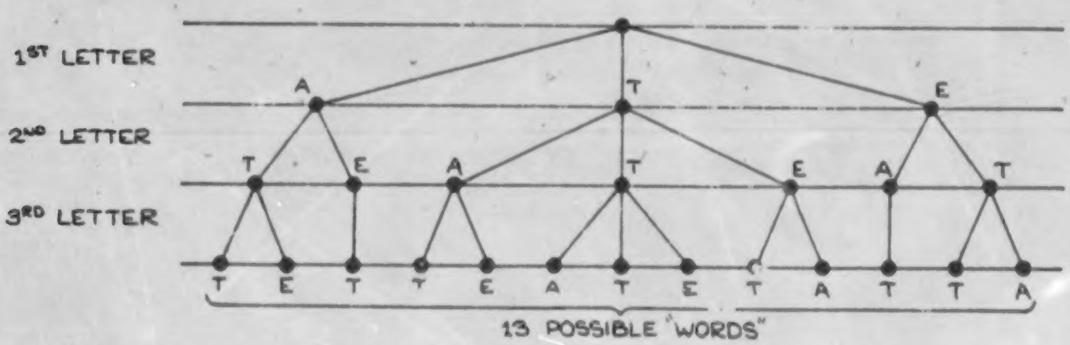
YES, THREE LETTER WORDS, PLEASE

(CONTINUED)

The experiment can be repeated, but this time replace the chip before making the next pick. When the results of two trials per pair of students are recorded, all possible words probably won't be listed. Again ask students if other words are possible. Suggest making a tree diagram to show possible words.


1ST LETTER
2ND LETTER
3RD LETTER
T
A
E
T A E T A E T A E
T A E T A E T A E T A E T A E T A E T A E T A E T A E T A E
27 POSSIBLE "WORDS"

A more difficult experiment uses partial replacement. If T is picked, replace. If either A or E is picked, do not replace. Follow the above procedures for recording results, drawing the tree, etc. The fundamental counting principle can not be used for this experiment because a consistent number of ways for choosing the 2nd and 3rd letter can't be made. The tree diagram is an efficient way to show the results.


1ST LETTER
2ND LETTER
3RD LETTER
A
T
E
T E A T E A T
T E T T E A T E T A T T A
13 POSSIBLE "WORDS"

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last** / **First**) **Age or Grade** ____________

Content Area General Math **Skills List No.** ____________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to use the fundamental counting principle.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, 5 Coins in the Fountain, is good for the student to use in discovering the fundamental counting principle. If the teacher wishes, she could have five different coins or chips and carry out the experiment. As the student goes through the process, he will discover that the principle for five things being ordered is 5 x 4 x 3 x 2 x 1 or 120 different orders. When the student has completed this activity, Numbers and Letters, is another activity that will help develop these skills.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to use the fundamental counting principle.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____________ (**Signature** / **Title**)

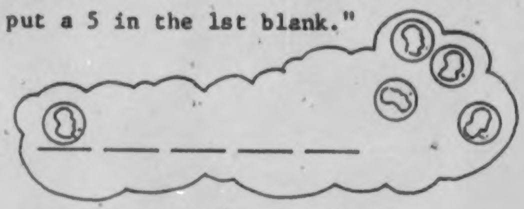
5 COINS IN THE FOUNTAIN

The shopping center has a fountain. People throw money into the water. The money is usually given to charity. The merchants wanted to advertise a special sale. They offered all the money in the fountain to any 5th, 6th, 7th or 8th grader who could figure out how many different ways 5 coins could be arranged in a row. The coins are a penny, a nickel, a dime, a quarter and a half dollar.

1) What is your guess? ________

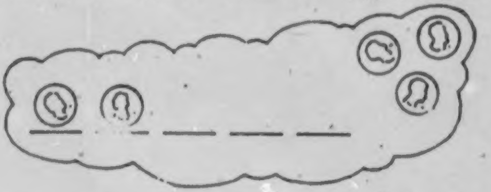
Tammy tried to solve the problem this way. She drew 5 blanks. She thought, "Any of the 5 coins could be in the first blank. I will put a 5 in the 1st blank."

5 ____ ____ ____ ____



"Once I put a coin in the first blank, 4 coins are left to choose from for the second blank."

5 4 ____ ____ ____



Finish Tammy's work. How many coins are left to choose from for the third blank; then for the fourth blank; then for the fifth blank?

5 4 ____ ____ ____

2) How many different ways can the 5 coins be arranged? ________

3) Is your answer to (2) close to your guess in (1)? ________

4) How many ways can 4 people sit in 4 seats in a row at a theater?

___ ___ ___ ___ = ____

5) How many ways can 6 books be arranged in order on a shelf?

___ ___ ___ ___ ___ ___ = ____

6) How many ways can 7 bottles of pop be placed in a row on a grocer's shelf?

___ ___ ___ ___ ___ ___ ___ = ____

NUMBERS AND LETTERS

1) A zip code has 5 digits. How many zip codes are possible if each digit can be 0 - 9? ____________

2) A social security number is a 9 digit number written in three parts.

2 9 8 - 8 4 - 8 0 5 9

Everyone's social security number is different.

a) If all digits 0 - 9 can be used, how many social security numbers are possible? ____________

b) Are there enough numbers so each citizen in the United States can have a different number? ________

3) License plates in Oregon have 3 letters and 3 digits. I's and O's are not used as letters. The first letter shows the month the license plate was issued: A for January, B for February, etc. (remember the letter I is not used).

a) What letter represents licenses issued in November? _____

b) How many license plates are possible? ____________

LETTERS AND NUMBERS CAN BE REPEATED.

c) In 1974, 1,579,736 cars, trucks and buses were licensed in Oregon. How many possible license plates were not being used? ____________

4) TV and radio stations have station codes starting with K or W (KWAX or WJW). Some stations use 3 letters. Other stations use 4 letters. Letters may be repeated.

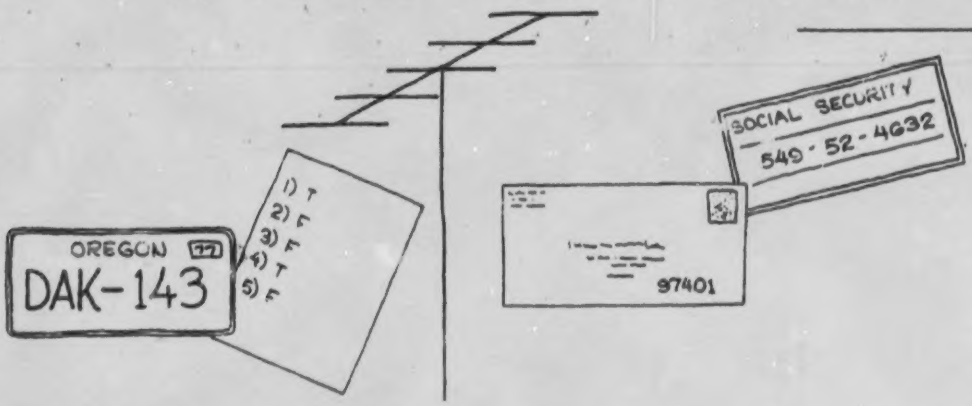
a) How many station codes with 3 letters are possible? ________

b) How many station codes with 4 letters are possible? ________

c) An almanac lists 4,357 AM, 2,448 FM and 721 TV stations in the United States in 1974. If each station did have a different code, how many station codes are not used? ________

5) You are going to take a True - False test with 10 questions. You forgot to study. So you decide to guess at the answers. How many sets of guesses are possible?

____



Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ ______________ **Age** ______________
Last First **or**
Grade ______________

Content Area General Math **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know what the term factorial is.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, Sporty Numbers, to develop the concept of factorials. The teacher will help the student see the relationship between factorials and the fundamental counting principle. The teacher can, if she wishes, let the student use a calculator to ease the burden of the multiplication that is needed.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to know what factorial is, and use the concept.

Total Days Participation ______________ out of a possible ______________

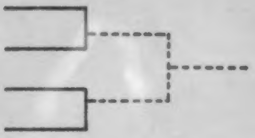
Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________ ______________
Signature Title

SPORTY NUMBERS

1) The girls' volleyball team is having a picture taken. How many different ways can the 6 girls line up for the picture? ______

2) Four friends decide to play a tennis tournament. How many different ways can the players' names be placed on the first part of the tournament ladder? ________



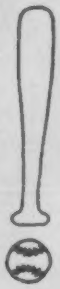
3) The Fighting Ducks basketball team always plays man-to-man defense. How many different ways can the 5 defensive assignments be made? ______

4) Joe Fan got 8 sports books for Christmas. How many different ways can he arrange them in a row on a bookshelf? _______

5) A baseball team has 9 players. How many different batting orders can a manager make up? ______

6) The Oakland Raiders starting defensive team is being introduced at the Super Bowl. How many different ways can the 11 team members be introduced? _______

Products like the ones above are called factorials. You start with a number and keep multiplying by the next smaller number until you get to 1. An exclamation mark (!) is used to show a factorial. 6 x 5 x 4 x 3 x 2 x 1 can be written as 6! (6! is read "six factorial.")



7) Write the factors for 7!. (7! is read "seven factorial.")

____

8) Find the value for 7! ________

9) What is the largest factorial your calculator can display without indicating an overflow?

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age** ______________
Last First
or
Grade ______________

Content Area General Math **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to use the concept of factorial to compute.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, Webster's Dictionary, to introduce some of the types of computations possible using factorials. As the student goes through the activity, she will become confident with her ability to use the concept of factorials, and she will see the difference between factorial operations and other mathematical operations.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to do computations involving factorials.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature Title

WEBSTER'S DICTIONARY

Work each exercise. Find the correct answer in the riddle below. Put the appropriate letter in each blank.

Ⓔ How many different ways can you arrange the letters in MJX? ____

Ⓐ What is the value of 6 X 5!? ______

Ⓞ How many different telephone numbers can be made by rearranging the digits in 348-5927 if no digits are repeated? _____

Ⓡ What is the value of 6! ÷ 3!? ______

Ⓕ 5! is how much smaller than 5^3? ______

Ⓣ What is the value of 7! ÷ 4!? ______

Ⓢ How many different ways can you arrange the letters in SCRAMBLE? ______

Ⓑ What is the value of 7! - 6!? ______

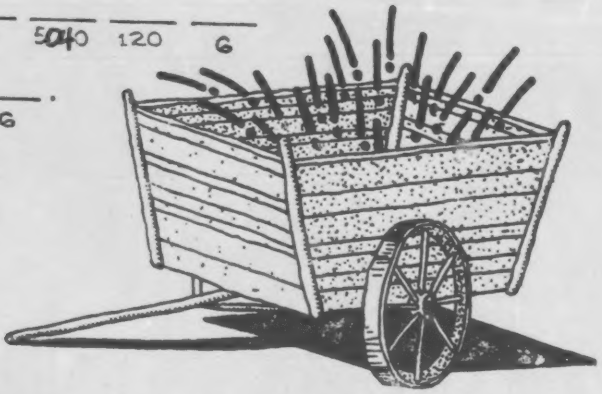
Ⓒ How many different zip codes can be made by rearranging the digits in 97402 if no digits are repeated? ______

Ⓗ What is the value of 3! + 5!? ______

IN 1801 NOAH WEBSTER BECAME FAMOUS BECAUSE HE PUT

___ ___ ___ ___   ___ ___ ___ ___ ___ ___
120 720 120 210   4320 6 5 5040 120 6

___ ___ ___ ___ ___.
126 5040 120 40320 6



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ (Last) ______________ (First) **Age or Grade** ______________

Content Area General Math **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to learn the concept of combinations.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, And the Winner Is, is a good activity for the teacher to use to introduce the concept of combinations. As the student goes through the activity, he can, with the teachers help, get an overview and begin to discover the basic characteristics of the concept of combinations.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to know the concept of combinations.

Total Days Participation ______________ **out of a possible** ______________

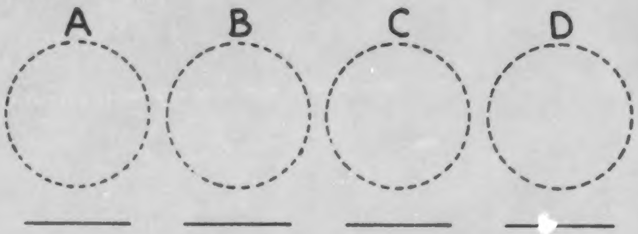
Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ (Signature) ______________ (Title)

AND THE WINNER IS...

Materials: 4 pennies - each with a different date

Activity:



1) Place the pennies in the circles.
Write the date below each penny.

A contest is being held to pick two pennies. I will choose two dates but won't tell you. You will win the pennies if you choose the correct pair.

YOU WON'T REALLY WIN TWO PENNIES. THIS IS JUST A STORY.

2) What are the choices you could make?
   a) If you choose A first, the pairs could be
      A ____, A ____, or A ____ .
   b) Choosing B first, B ____, B ____, or B ____ .
   c) Choosing C first, C ____, C ____, or C ____ .
   d) Choosing D first, D ____, D ____, or D ____ .

Look closely. You win by choosing the correct pair. Penny A and Penny B is the same pair as Penny B and Penny A.

3) In (2), circle a pair. Cross out any pair that is the same. Continue circling and crossing out until no repeats are left. Now how many different pairs can you choose from? ________

4) Suppose another penny is added; label it E.
   a) Write all the pairs.

A ___ , A ___ , A ___ , A ___
B ___ , ___ ___ , ___ ___ , ___ ___
___ ___ , ___ ___ , ___ ___ , ___ ___
___ ___ , ___ ___ , ___ ___ , ___ ___
___ ___ , ___ ___ , ___ ___ , ___ ___

   b) Circle a pair. Cross out any pair that is the same. How many different pairs are there? ______

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ Last ____________ First **Age** ____________ **or Grade** ____________

Content Area General Math **Skills List No.** ____________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to find combinations using the basic definition.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, Choosing Points On A Circle, to develop the concept of finding combinations. As the student goes through the activity, he will discover that the process is one that needs to be analyzed carefully. The teacher will be able to point out to the student as the activity progresses the specific items that make finding combinations unique.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find combinations using the basic definition.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____________ Signature ____________ Title

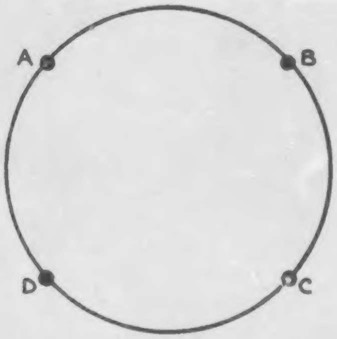
CHOOSING POINTS ON A CIRCLE

This activity shows how to form combinations using points on a circle. Segments, triangles or quadrilaterals help to illustrate the different ways to make choices. Differently colored pens or chalk may help to emphasize choices.

Write the table below on the board or a transparency. Fill it in as the different ways are found. A circle with four points is used for this demonstration.

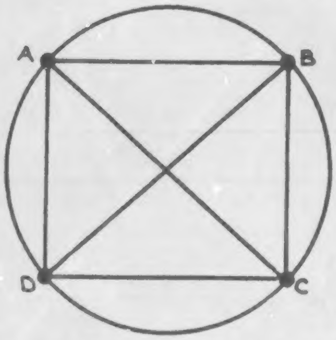
WAYS TO CHOOSE

	1 POINT	2 POINTS	3 POINTS	4 POINTS
CIRCLE WITH 4 POINTS				



a) The circle has four points marked. How many ways can you choose one point?

You can choose A (point to A).
You can choose B (point to B).
You can choose C (point to C).
You can choose D (point to D).
You can choose one point in 4 ways (record 4 in the table).



b) How many ways can you choose two points?

Show your choice of two points by connecting the points with a line segment.

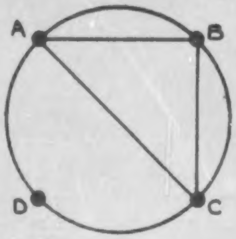
You can choose A and B (draw the segment).
You can choose A and C (draw the segment).
(Continue until all 6 choices are shown. Emphasize that the choice of A and B is the same as the choice B and A. Only one segment is drawn between A and B. The order that the two points were chosen doesn't matter.)

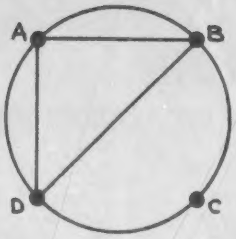
You can choose two points in 6 ways (record 6 in the table).

CHOOSING POINTS ON A CIRCLE

(PAGE 2)

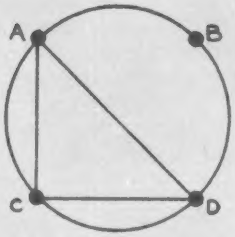
c) How many ways can you choose three points?
Show your choice by drawing a triangle to connect the three points.

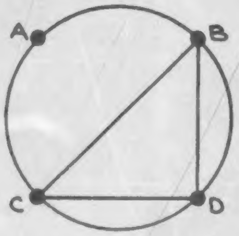




You can choose A, B and C (draw the triangle).

You can choose A, B and D (draw the triangle).





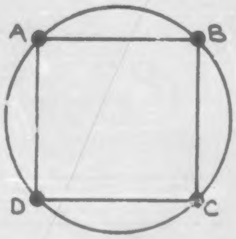
You can choose A, C and D (draw the triangle).

You can choose B, C and D (draw the triangle).

You can choose three points in 4 ways (record 4 in the table).

(Using the four graphics have students see that a choice of three points together is like leaving one point out. Choosing A, B and C together leaves D out. The number of ways of choosing three points out of four is the same as the number of ways of choosing one point out of four. Refer to the table to show the numbers are the same.)

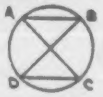
d) How many ways can you choose four points?
Show your choice by drawing a quadrilateral to connect the four points.



You can choose A, B, C and D (draw the quadrilateral).

You can choose four points in 1 way (record 1 in the table).

(Emphasize that the choices of B, C, D and A or C, B, D, and A will give the same quadrilateral. If a student suggests the points A, C, D and B you will need to emphasize that these are the same four points even though the figure looks different.)



CHOOSING POINTS ON A CIRCLE

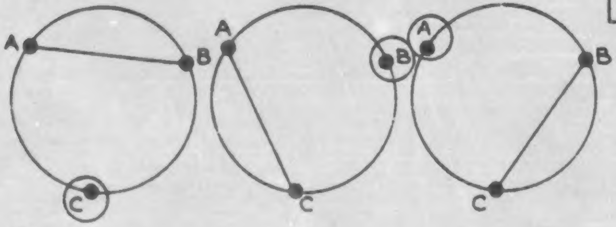
(PAGE 3)

Similar discussions about 3 points, 2 points, 1 point and 5 points given on a circle should give the results in the table to the right.

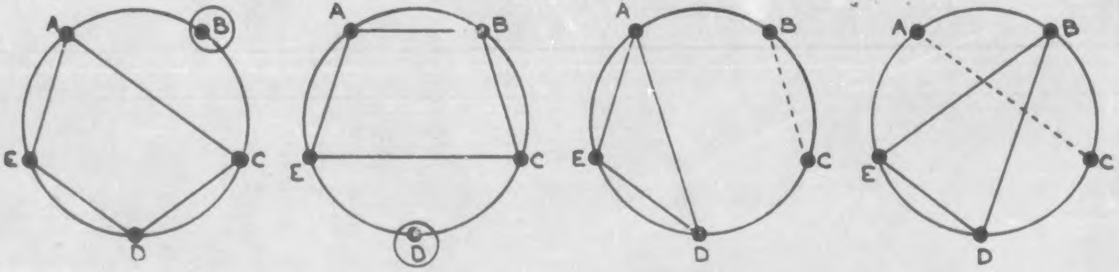
While working with the circle with 3 points, emphasize that choosing two points automatically leaves one point out.

WAYS TO CHOOSE

	1 POINT	2 POINTS	3 POINTS	4 POINTS	5 POINTS
1 POINT	1				
2 POINTS	2	1			
3 POINTS	3	[illegible]	1		
4 POINTS	4	6	4	1	
5 POINTS	5	10	10	5	1



In the circle with 5 points, the total number of choices of three points and four points are difficult to find and draw, but students can find the number of choices for four points by realizing it will be the same as the number of choices for one point. Similarly the number of choices for three points will be the same as the number of choices for two points. Two examples of each are shown below.



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ ______________ **Age** ______________
Last First or
Grade ______________

Content Area General Math **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to find permutatives with repeating elements.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should review the third page of the attached activity, Repeating Permutations, to get some extra insight into the concept. She can then help the student through the activity, which will allow the student to discover the concept of permutation, and the characteristics of them. As the student goes through the activity, she will see that the number of possibilities is greatly diminished when there are indistinguishable pairs or triples in a group.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

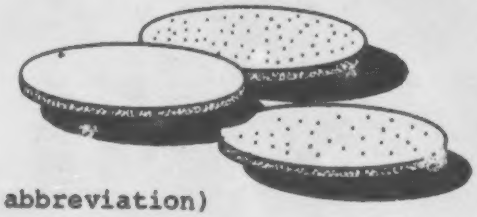
Given a teacher made test, the student will be able to find permutations with repeating elements.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature Title

REPEATING PERMUTATIONS



1) Get 3 chips, each a different color.
Place a chip on each of these blanks.

_______ _______ _______

2) Write the order of the colors. (Use an abbreviation)

____ ____ ____

3) Move the chips. Find different arrangements.
Record each arrangement.

____ ____ ____
____ ____ ____
____ ____ ____
____ ____ ____
____ ____ ____

THE THREE CHIPS CAN BE ARRANGED IN A ROW SIX DIFFERENT WAYS.

4) Remove 1 chip. Get another chip with the same color as a chip you kept.

QUESTION: CAN YOU STILL MAKE SIX DIFFERENT ARRANGEMENTS?

5) Place a chip on each of these blanks. _______ _______ _______

6) Write the order of the colors. ____ ____ ____

7) Take the 2 chips with the same color and trade places.
Write the order of the colors. ____ ____ ____

8) Is there a difference in the answers to (6) and (7)? ______

9) Move the chips to make as many different arrangements as you can.
Write each new arrangement of the colors. __________________________

10) Including the arrangement in (6), how many did you find? ______

11) Explain why there are fewer arrangements when a color is repeated.

REPEATING PERMUTATIONS

(PAGE 2)

The Beebe family, Mom, Dad, Otto and Barbara, are interested in how many different arrangements of the letters in each name can be made.

Help them out by writing the letters of each name on separate slips of paper. (Don't do Barbara's name.) Arrange the letters in as many different ways as you can. Record each different arrangement.

a) MOM Place and rearrange the letters here: ______ ______ ______

Record the different arrangements here.

How many different arrangements did you find? ______

b) DAD Place and rearrange the letters here: ______ ______ ______

Record here.

How many different arrangements? ______

c) OTTO ______ ______ ______ ______

Record here.

How many different arrangements? ______

d) BEEBE ______ ______ ______ ______ ______

Record here.

How many different arrangements? ______

e) BARBARA Guess how many different arrangements there are. ______

Check with your teacher for the answer.

REPEATING PERMUTATIONS

(PAGE 3)

How many different arrangements of the letters in ALASKA? If each letter were different, 6 x 5 x 4 x 3 x 2 x 1 = 6! arrangements would be possible. But switching the A's does not distinguish one arrangement from another. For example, ALASKA - ALASKA. Can you tell the first A and the last A were switched in the second spelling? In ALASKA there are 3 x 2 x 1 = 3! different ways to arrange the A's and not change the spelling. So the different arrangements of the letters are $\frac{6!}{3!}$ or $\frac{6 \times 5 \times 4 \times 3 \times 2 \times 1}{3 \times 2 \times 1} = 120$.

On the first page, the different arrangements of the chips (two with the same color) is $\frac{3!}{2!}$ or $\frac{3 \times 2 \times 1}{2 \times 1} = 3$.

The different arrangements of the letters in TENNESSEE would be

$$\frac{8!}{4!2!2!} \text{ or } \frac{8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1}{4 \times 3 \times 2 \times 1 \times 2 \times 1 \times 2 \times 1} = 420.$$

If you have developed this concept with your class, you can ask them to find the different arrangements of letters in words such as states: ALASKA, TENNESSEE, MISSISSIPPI, (your state, city or town), animal names: ELEPHANT, KANGAROO, ANACONDA, fruit: TANGARINE, BANANA, APPLE, etc.

Palindromic words, spelled the same backwards as forwards, could be used to investigate permutations with repetition. RADAR, TOOT, ZOONOOZ (a publication of the San Diego Zoo), MADAM, I'M ADAM are just a few examples.

Students may enjoy finding the number of permutations in the letters of their names; first, last or both.

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ ______________ **Age** ______________
Last First or
Grade ______________

Content Area General Math **Skills List No.** 597

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will become acquainted with Pascal's Triangle, and will be able to see relationships in it.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should review the second page of the attached activity, That Rascal Pascal, to get some extra insight into the concept. He can help the student through the activity, which will introduce the student to the concept of Pascal's Triangle. As the student goes through the activity, she will be encouraged to look for the number patterns that are developing. As the student goes through the activity, she should discover that the sum of any two adjacent numbers will equal the number below and between the numbers.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to make Pascal's Triangle and discover relationships in it.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature Title

THAT RASCAL PASCAL

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

1 5 10 10 5 1

This number triangle is called Pascal's triangle. Blaise Pascal was a French priest who was very interested in mathematics. The patterns in the triangle can be extended indefinitely.

1) Find these four groups in Pascal's triangle.

1 2
3

6 4
10

3 3
6

4 1
5

2) Do you see a relationship among the three numbers in each group? _____

3) Use the relationship you found to write three more rows on the triangle above.

4) These groups occur later in the triangle. Find each missing number.

a)
9 36
?

b)
? 120
165

c)
210 ?
462

d)
? 120 45
330 ?
?

The following points are needed *if* students are to read and use the triangle.

1) If you are picking from 3 objects, look at the row 1, *3*, 3, 1. If you are picking from 5 objects, look at the row 1, *5*, 10, 10, 5, 1, etc.

2) The 1 in the first position of each row tells the number of ways 0 objects can be chosen. For example, choosing 0 objects out of 3 can be done in 1 way.

3) The 1 in the last position tells the number of ways all the objects can be chosen. For example, choosing 3 objects out of 3 can be done in 1 way.

$$\begin{array}{ccccccccccccc} &&&&&&1&&&&&& \\ &&&&&1&&1&&&&& \\ &&&&1&&2&&1&&&& \\ &&&1&&3&&3&&1&&& \\ &&1&&4&&6&&4&&1&& \\ &1&&5&&10&&10&&5&&1& \\ 1&&6&&15&&20&&15&&6&&1 \end{array}$$

If there are 5 objects, 0 objects can be chosen in 1 way, 1 object in 5 ways, 2 objects in 10 ways, 3 objects in 10 ways, 4 objects in 5 ways and 5 objects in 1 way.

4) Choosing a number of objects automatically forms another set of objects that was not chosen. Pascal's triangle shows this by its symmetrical nature. Choosing 2 objects from 3 can be done in 3 ways; choosing 1 object from 3 can also be done in 3 ways.

5) The usual notation used for combinations is $\binom{n}{r}$ indicating r objects chosen from n objects without regard for the order of the objects.

a) $\binom{n}{1} = n$ See (1) above.

b) $\binom{n}{0} = 1$ See (2).

c) $\binom{n}{n} = 1$ See (3).

d) $\binom{n}{r} = \binom{n}{n-r}$ See (4).

e) $\binom{n}{r} + \binom{n}{r+1} = \binom{n+1}{r+1}$ Remember the rule for generating Pascal's triangle.

f) $\binom{0}{0} = 1$ This allows the triangle to be complete.

$$\begin{array}{ccccccccc} &&&&\binom{0}{0}&&&& \\ &&&\binom{1}{0}&&\binom{1}{1}&&& \\ &&\binom{2}{0}&&\binom{2}{1}&&\binom{2}{2}&& \\ &\binom{3}{0}&&\binom{3}{1}&&\binom{3}{2}&&\binom{3}{3}& \\ \binom{4}{0}&&\binom{4}{1}&&\binom{4}{2}&&\binom{4}{3}&&\binom{4}{4} \end{array}$$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ Last ______________ First **Age** ______ or **Grade** ______

Content Area General Math **Skills List No.** 35400, 10300
Sight & Sound No. 8.0.2.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to round a whole number to a designated place name.

Activities: What will be done, when, how much (time), by whom?

The teacher will write different whole numbers on a piece of paper and show them to the student. He will then ask the student to round the number off to a particular place, using the rules of rounding. The list should include numbers like 1297, rounded to the nearest 10, which would involve rewriting digits in three locations, rather than just two locations.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to round a whole number to a designated place 100% of the time.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age** ______________
Last First or
Grade ______________

Content Area General Math - Rounding **Skills List No.** 35400, 10300
Sight & Sound No. 8.0.2.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to round a decimal fraction and mixed decimal numbers to any place valve.

Activities: What will be done, when, how much (time), by whom?

The teacher will write on paper a variety of decimal fractions and mixed decimal numbers, and have them round the numbers off to a particular place following the rules of rounding. The list should include numbers like 2.197, rounded to the nearest hundreth, which would involve rewriting digits in three locations, and 12.46 to the nearest tenth, which involves rewriting in three locations and moving across the decimal point.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made list of decimal fractions and mixed decimal numbers, the student will be able to round each correctly to a location predetermined by the teacher.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ Last ______________ First ______________ **Age** ______ or **Grade** ______

Content Area General Math **Skills List No.** 11200, 11800, 12100
Sight & Sound No. 8.0.3.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to do addition with the basic facts.

Activities: What will be done, when, how much (time), by whom?

The teacher will have a bag of dried beans. She will put two small (less than ten) groups of beans on the table and ask the student for the total. At the same time, the corresponding addition problem will be asked for, and written down. This activity could also be done with other types of like objects such as marbles, match sticks, blocks of wood, or ice cream sticks.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to correctly do addition problems using the basic facts.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature ______________ Title

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ Age ____________
Last First or
Grade ____________

Content Area General Math **Skills List No.** 11200, 11800, 12100
Sight & Sound No. 8.0.3.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to do addition using the basic facts without carrying.

Activities: What will be done, when, how much (time), by whom?

The teacher will have a large number of dried beans and place two piles of beans so that the addition to be carried out will not involve carrying. (For example 32 and 43; but not 32 and 49.) The student will be asked to give a total. At the same time, the corresponding addition problem will be asked for and written down. Rounding to estimate the answer will also be discussed to help determine the validity of the answer to the problem.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to do addition problems not involving carrying, using the basic addition facts.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: **District:** **Area**

For Dates **to**

Student Name **Last** **First** **Age or Grade**

Content Area General Math **Skills List No.** 10301, 10302, 12400, 12700
Sight & Sound No. 8.0.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to do addition with carrying.

Activities: What will be done, when, how much (time), by whom?

The teacher will take a large number of ice cream sticks and rubber bands, and group the sticks to represent a pair of numbers, such as 26 and 48. The 26, for example, would have two banded groups of ten, and six loose sticks. She will then ask how many sticks the two groups represent. The student will notice that the two sets of loose sticks can be grouped into one additional set of ten, with four left over. The addition problem represented by the problem will also be written on paper with the carrying represented in the correct fashion. A similar process will be carried out for addition of three digit and four digit numbers.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to add pairs of two, three, and four digit numbers involving carrying.

Total Days Participation **out of a possible**

Criterion Attained: Yes **No** **Date**

Teacher:
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ (Last) ______________ (First) ______________ **Age or Grade** ______________

Content Area General Math **Skills List No.** 13300, 14100, 15300

Sight & Sound No. 8.0.5.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to do subtraction using the basic facts without borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher will have a large number of ice cream sticks and make a number such as 56 by grouping five groups of ten with rubber bands, with six left loose. She will then ask the student to take a number such as 34, which can be done without borrowing, away and stating the result. The corresponding subtraction problem will also be stated and written down. Rounding to estimate the answer will also be discussed to help determine the validity of the answer to the problem.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to do subtraction problems not involving borrowing, using the basic subtraction facts.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ (Signature) ______________ (Title)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: __________ District: __________ Area __________

For Dates __________ to __________

Student Name __________ Last __________ First Age __________ or Grade __________

Content Area General Math Skills List No. 13300, 14100, 15300
Sight & Sound No. 8.0.5.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to do subtraction with basic facts.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will have a bag of dried beans. She will put down a pile of ten or fewer beans and ask the student to move a predetermined number of beans away and describe how many are left. At the same time, the corresponding subtraction problem will be asked for and written down. This activity could also be done with other types of like objects such as marbles, match sticks, blocks of wood, or ice cream sticks.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the students will be able to correctly do subtraction problems using the basic facts.

Total Days Participation __________ out of a possible __________

Criterion Attained: Yes __________ No __________ Date __________

Teacher: __________ Signature __________ Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age** __________
Last First or
Grade __________

Content Area General Math **Skills List No.** 14400, 15600
Sight & Sound No. 8.0.6.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract pairs of three digit numbers, involving borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher will group and bundle a number of ice cream sticks to represent a number such as 581. The student will be asked to take away a predetermined number such as 152, that will involve borrowing from one of the groups. The student will be asked how many sticks are left. Another similar problem will involve borrowing from the hundreds column, such as 637 minus 482. In both cases, the corresponding subtraction problem will be written down and the correct method of borrowing will be carried out.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to subtract three digit numbers with borrowing.

Total Days Participation ______________ out of a possible ____________________

Criterion Attained: Yes ____________ No ____________ Date ______________

Teacher: ____
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ District: ______ Area ______

For Dates ______ to ______

Student Name ______ Last First Age ______ or Grade ______

Content Area General Math Skills List No. 14400, 15600
Sight & Sound No. 8.0.6.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract pairs of two digit numbers involving borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher will bundle a group of ice cream sticks to represent a number such as 64. She will then ask the student to take away a number such as 37, that will involve borrowing from one of the groups. The student will then be asked how many sticks are left. The corresponding subtraction problem will be written on paper with the correct borrowing techniques being used.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to subtract two digit numbers with borrowing.

Total Days Participation ______ out of a possible ______

Criterion Attained: Yes ______ No ______ Date ______

Teacher: ______
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ District: ______________________ Area ______________

For Dates ______________ to ______________

Student Name ____ Age ____________
Last First or
Grade ____________

Content Area General Math Skills List No. 14400, 15600
Sight & Sound No. 8.0.6.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to subtract pairs of three digit numbers involving borrowing from the tens and hundreds column.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will correctly bundle and group ice cream sticks to represent a number such as 632. The student will be asked to take away a predetermined number such as 357, that will involve borrowing from both the tens and hundreds column. The student will then give the result of the movement. The corresponding subtraction problem will be written down and the correct method of borrowing will be carried out.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to subtract pairs of three digit numbers involving borrowing from the tens and hundreds column.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ____
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** ________
Last **First** **or**
Grade ________

Content Area General Math **Skills List No.** 15605, 15607
Sight & Sound No. 8.0.7

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to subtract numbers that involve a zero in the top number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will group and bundle a number of ice cream sticks to represent a number such as 506 that involves a zero. The student will be asked to remove a predetermined number such as 234. The result of the removing will be noted. The corresponding subtraction problem will be written down and the correct method of borrowing will be carried out. In a similar way, problems such as 430 - 213 can be done.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to subtract from numbers that involve zeros in the top numbers.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age** __________
Last First **or**
Grade __________

Content Area General Math **Skills List No.** 36900, 37200, 37500, 37800
Sight & Sound No. 8.0.8.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to add mixed decimal numbers using basic addition facts without carrying.

Activities: **What will be done, when, how much (time), by whom?**

1) A pair of activities may be used by the teacher to deal with the addition of mixed decimal numbers without carrying. One is to use the grid decimal system (see second sheet). The addition can be shown by shading the amount equal to the numbers to be added, and then read the result from the work. The corresponding addition problem can be written down and discussed at the same time.

2) A second activity is to use a decimal abacus (see attached sheet). The numbers are represented by chips or beans on the abacus and the result of the addition can be read off the abacus. Again, the corresponding addition problem can be written down and discussed at the same time.

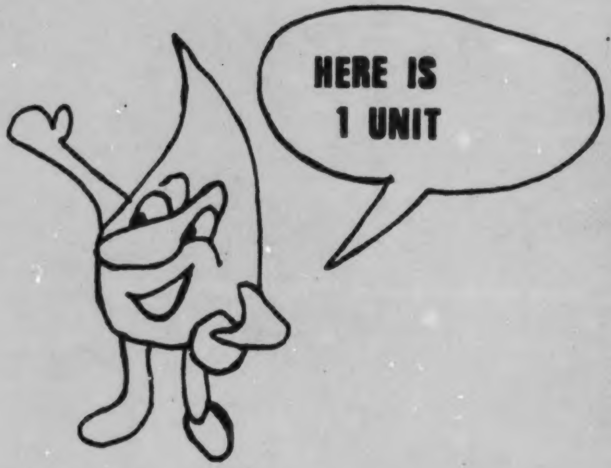
Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to add decimal fractions without carrying.

Total Days Participation ____________ **out of a possible** ________________

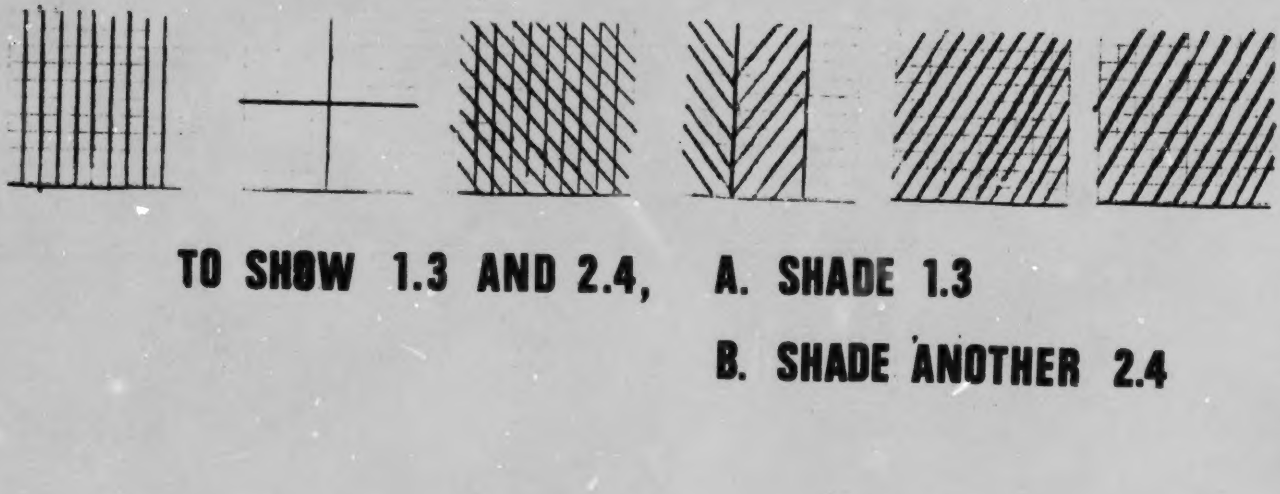
Criterion Attained: **Yes** __________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**


HERE IS
1 UNIT

EACH OF THESE IS ALSO

1 UNIT



TO SHOW 1.3 AND 2.4, A. SHADE 1.3

B. SHADE ANOTHER 2.4

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age or Grade** ______________
Last First

Content Area General Math **Skills List No.** 36900, 37200, 37500, 37800
Sight & Sound No. 8.0.8.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add decimal fractions using basic addition facts without carrying.

Activities: What will be done, when, how much (time), by whom?

A couple of different activities can be used to deal with the addition of decimal fractions without carrying.

1) One is to use grid decimals (see attached sheet). The addition of numbers can be shown by shading the numbers to be added, and the result will be seen on the paper. The corresponding addition problem can be written down at the same time.

2) A second activity is to use a decimal abacus (see attached sheet). The numbers are represented by chips or beans on the abacus and the result of the addition can be read off the abacus. Again, the corresponding addition problem can be written down at the same time.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

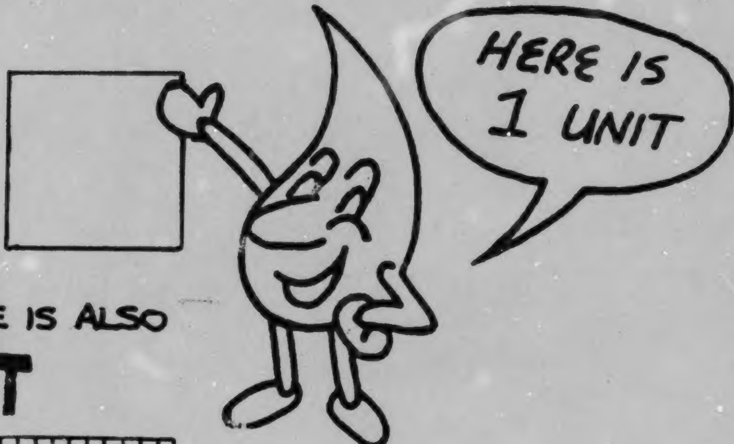
Given a teacher made test, the student will be able to add decimal fractions without carrying.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

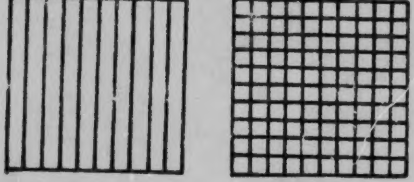
Teacher: ______________________________
Signature **Title**

GRID DECIMALS - II

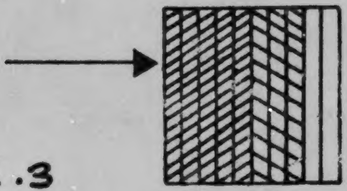

HERE IS
1 UNIT

EACH OF THESE IS ALSO

1 UNIT



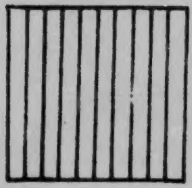
TO SHOW .5
+ .3



A. SHADE .5
B. SHADE ANOTHER .3

SHOW .4
+.3

A. SHADE .4
B. SHADE .1



ABACUS

An abacus is a tool for representing numbers with some sort of markers. The markers are placed in the columns of each place value. Abaci are useful for working with whole number and decimal concepts and operations. There are many different kinds of abaci, many of which can be easily constructed. They can be purchased from Creative Publications and Scott Resources.

Each of the abaci described here can be extended to any number of places.

Construction Information:

Chip Abacus

Th	H	T	U	t	h

Materials and Construction:

Rule six columns on a sheet of tagboard in such a way that 10 chips will fit vertically in each column.

You can make several different label-strips to head the columns. Here are some possibilities:

RED	GREEN	BLUE	YELLOW

(Use colored chips in this case.)

Millions	Hundred Thous	Ten Thous	Thous	Hund	Tens	Units	Tenths	Hundth	Thsth	Ten Thsth	Hund Thsth

M	H-Th	T-Th	Th	H	T	U	t	h	th	t-th	h-th

10^6	10^5	10^4	10^3	10^2	10^1	10^0	$\frac{1}{10^1}$	$\frac{1}{10^2}$	$\frac{1}{10^3}$	$\frac{1}{10^4}$	$\frac{1}{10^5}$

Slide these strips to fit over the abacus with the units place wherever you want it. It can overlap on both sides or be folded back. Fasten to the abacus with paper clips.

If your chip abacus is laminated, you could write the labels with a grease pencil.

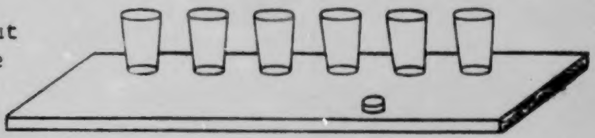
Cup Abacus

Materials:

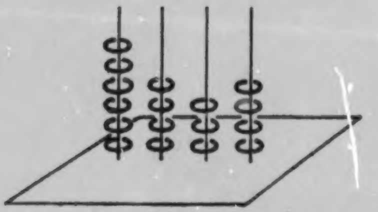
12 dixie cups, a 25" x 6" board (heavy cardboard or wood), beans or markers (not less than 100) and 1 black checker.

Construction:

Glue 6 cups to the board as shown. Put the other 6 cups inside each of these cups. (This simplifies dumping the beans out of separate cups.) The checker may be placed between any cups to designate the units place. Label the place value with strips like the Chip Abacus.



Bead Abacus



Materials:

- Block of wood, 1" by 3" by 6"
- Four 11" pieces of steel rod or wood doweling
- 80 beads or discs which will fit on the wire or doweling
- Glue

Construction:

- Drill four holes in the wood.
- Finish (make smooth) the upper end of each rod.
- Glue one rod into each hole.
- Put 20 beads or discs on each rod.
- A clothes pin can be used to separate beads on each rod before performing addition.

Readiness Activities:

1) A small checker could be used as a physical model of the decimal point. It can be moved to various parts of the abacus, thus varying the position of the units' place. Have the class figure out how the checker determines the units' place by moving the checker. Ask for guesses where the units' place is for all the possible positions of the checker.

2) Have the students practice different trading tasks, and decide on one to show the class.

3) Show a trade on one type of abacus. Have the class do the same trade on a different type of abacus.

4) See *Chip Trading* in WHOLE NUMBERS: Concepts for a variety of place value games that could be played with an abacus.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ to ______

Student Name ______ **Age** ______
Last First
or
Grade ______

Content Area General Math **Skills List No.** 36900, 37200, 37500, 37800
Sight & Sound No. 8.0.8.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to add decimal fractions using basic addition facts with carrying.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can prepare a couple of activities that deal with the addition of decimal fractions with carrying.

1) One is to use grid decimals (see attached sheet). The addition of numbers can be shown by shading the numbers to be added and the result will be seen on the paper. The corresponding addition problem can be written down at the same time.

2) A second activity is to use a decimal abacus (see attached sheet). The numbers are represented by beans or chips on the abacus and the result of the addition can be read off the abacus. Again, the corresponding addition problem can be written down at the same time.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

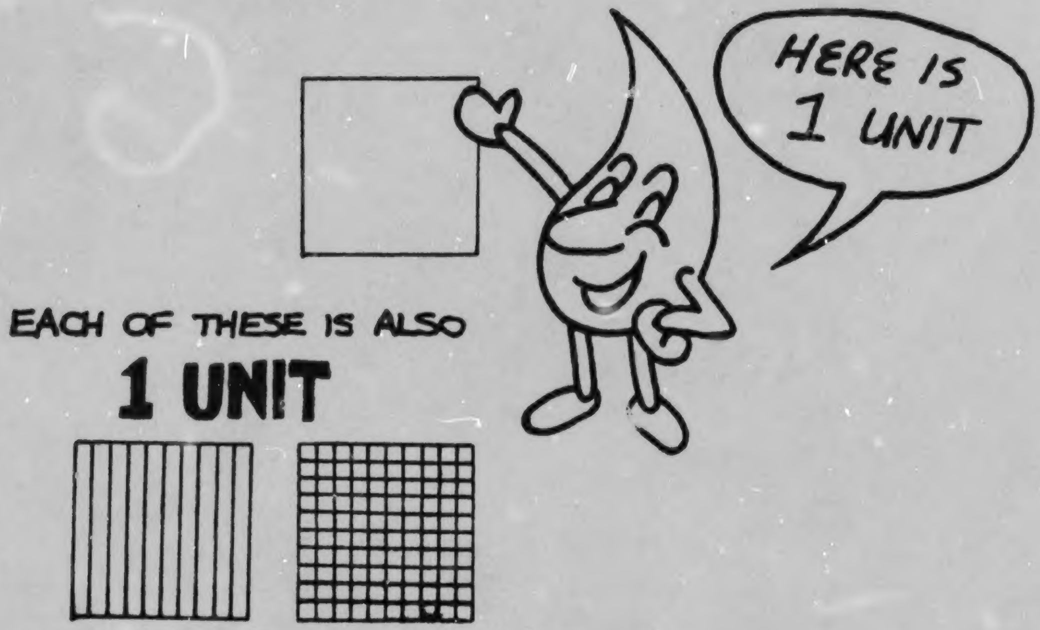
Given a teacher made test, the student will be able to add decimal fractions with carrying.

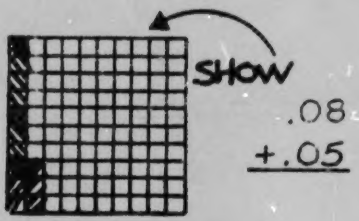
Total Days Participation ______ **out of a possible** ______

Criterion Attained: **Yes** ______ **No** ______ **Date** ______

Teacher: ______
Signature Title

GRID DECIMALS - II


HERE IS 1 UNIT
EACH OF THESE IS ALSO
1 UNIT



A. SHADE .08
B. SHADE ANOTHER .05

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ to ______

Student Name ______ Last First **Age or Grade** ______

Content Area General Math **Skills List No.** 36900, 37200, 37500, 37800
Sight & Sound No. 8.0.8.4

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to add mixed decimal numbers using carrying.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can prepare a couple of activities that deal with the addition of mixed decimal numbers with carrying.

1) One is to use grid decimals (see attached sheet). The addition of numbers can be shown by shading the numbers to be added, and the result will be shown on the paper. The corresponding addition problem can be written down at the same time.

2) A second activity is to use a decimal abacus (see attached sheet). The numbers are represented by beans or chips on the abacus and the result of the addition can be read off the abacus. Again, the corresponding addition problem can be written down at the same time.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

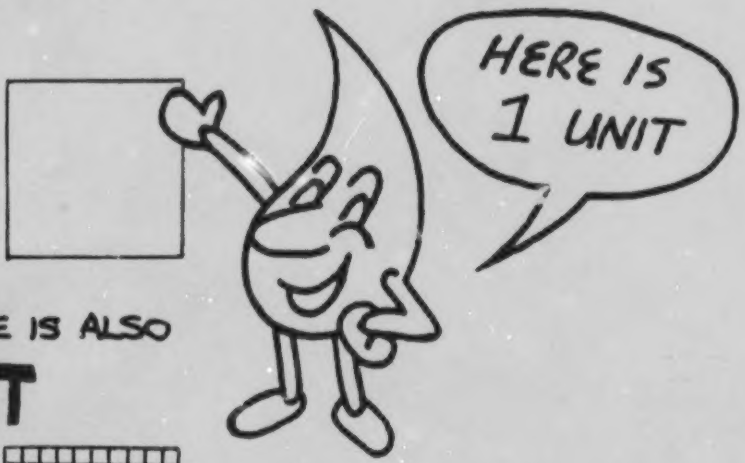
Given a teacher made test, the student will be able to add mixed decimal numbers using carrying.

Total Days Participation ______ out of a possible ______

Criterion Attained: Yes ______ No ______ Date ______

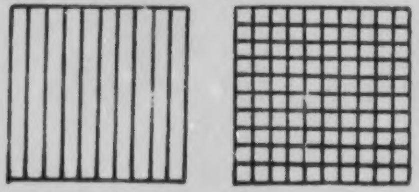
Teacher: ______ Signature Title

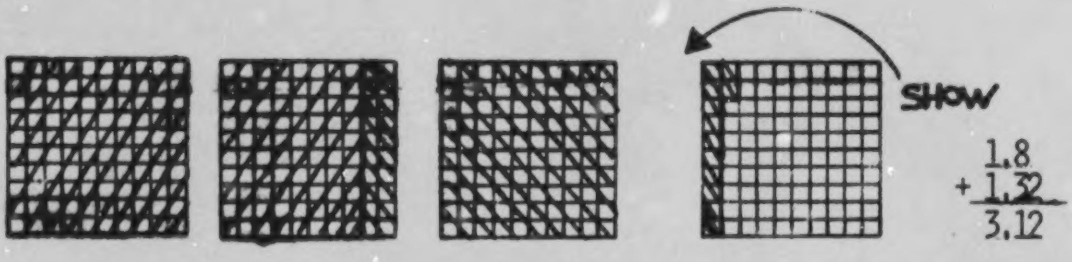
GRID DECIMALS


HERE IS
1 UNIT

EACH OF THESE IS ALSO

1 UNIT



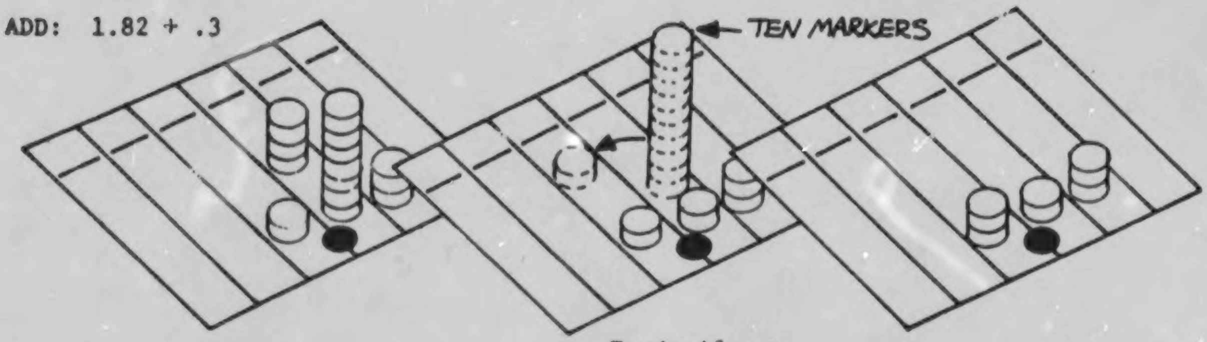


$$\begin{array}{r} 1.8 \\ +\,1.32 \\ \hline 3.12 \end{array}$$

A. SHADE 1.8
B. SHADE ANOTHER 1.32

ACTIVITY CARDS - DECIMAL ABACUS

ADD: 1.82 + .3



Trade if you
have 10 or
more markers
in one place.

1.82 + .3 = 2.12

Try these on an abacus.

3.1 + 1.4 =

36.1 + 27.3 =

4.91 + 3.68 =

17.1 + 92 =

$$\begin{array}{r} 23.04 \\ +\ 8.19 \\ \hline \end{array} \qquad \begin{array}{r} 104.3 \\ +\ 0.12 \\ \hline \end{array} \qquad \begin{array}{r} 2.11 \\ +\ 1.95 \\ \hline \end{array}$$

$$\begin{array}{r} 16.8 \\ +\ 2.9 \\ \hline \end{array} \qquad \begin{array}{r} 3.87 \\ +0.08 \\ \hline \end{array}$$

Try some problems of your own.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age** ______________
Last First
or
Grade ______________

Content Area General Math **Skills List No.** 36901, 37201, 37501, 37801
Sight & Sound No. 8.0.9

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add numbers less than one, and greater than zero, whose sum will be greater than one. (For example .7 + .5 = 1.2)

Activities: What will be done, when, how much (time), by whom?

The teacher can prepare a couple of activities that deal with the addition of decimal fractions.

1) One is to use grid decimals (see attached sheet). This addition of numbers can be shown by shading the numbers to be added, and the result will be shown on the paper. The corresponding addition problem can be written down at the same time.

2) A second activity is to use a decimal abacus (see attached sheet). The numbers are represented by beans or chips on the abacus, and the result of the addition can be read off the abacus. Again, the corresponding addition problem can be written down at the same time.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

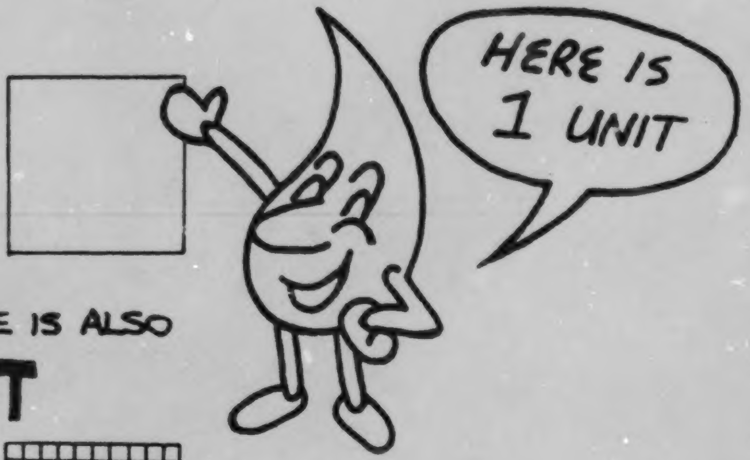
Given a teacher made test, the student will be able to add mixed decimal numbers using carrying.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

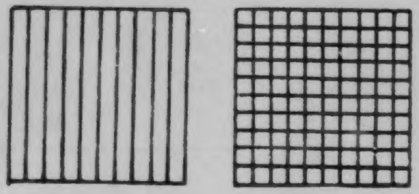
Teacher: ______________________________
Signature **Title**

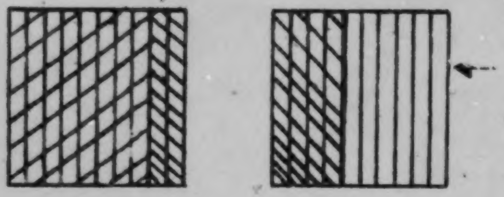
GRID DECIMALS


HERE IS 1 UNIT

EACH OF THESE IS ALSO

1 UNIT





TO SHOW

$$\begin{array}{r} .8 \\ \underline{+\,.6} \end{array}$$

A. SHADE .8
B. SHADE ANOTHER .6

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age or Grade** ______________
Last First

Content Area General Math **Skills List No.** 38100, 38400, 38700, 39000
Sight & Sound No. 8.0.10.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract mixed decimal numbers without borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher can prepare a couple of activities that deal with the subtraction of mixed decimal numbers.

1) One uses grid decimals (see attached sheet). This subtraction can be shown by shading the original number, and then shading the number to be subtracted. The remainder of the original number is the result of the subtraction. The corresponding subtraction problem can be written down at the same time.

2) A second activity uses a decimal abacus. The original number is represented by beans or chips on the abacus, and the number to ge subtracted is then taken away. The result of the subtraction is left on the abacus. Again, the corresponding subtraction problem can be written down and discussed.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

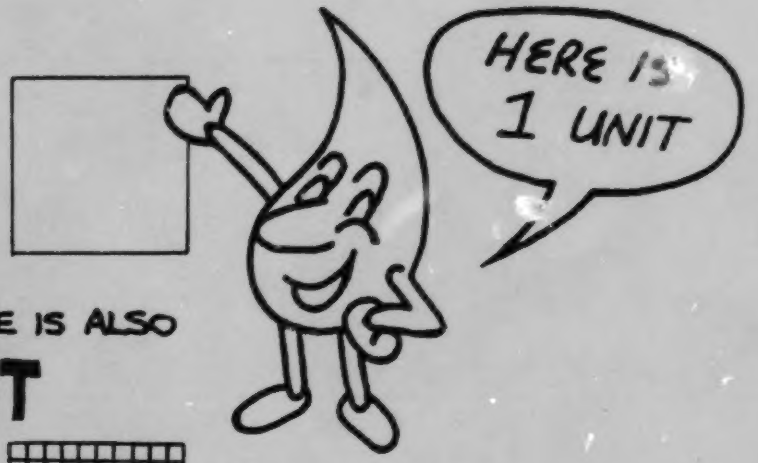
Given a teacher made test, the student will be able to subtract mixed decimal numbers without borrowing.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

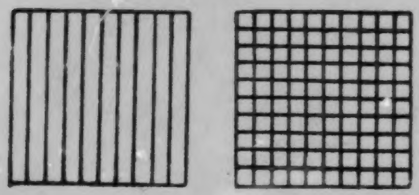
Teacher: ______________________________
Signature Title

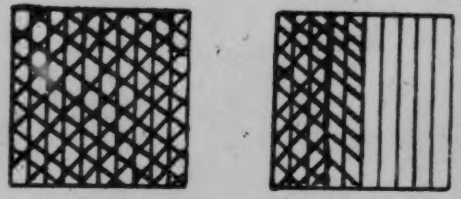
GRID DECIMALS


HERE IS
1 UNIT

EACH OF THESE IS ALSO

1 UNIT





TO SHOW

2.5
-1.3

A. SHADE LIGHTLY 2.5

B. DARKEN 1 WHOLE PLUS 3 OF THE SHADED TENTHS

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area General Math **Skills List No.** 38100, 38400, 38700, 39000
Sight & Sound No. 8.0.10.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to subtract decimal fractions using basic subtraction facts.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can prepare a couple of activities that deal with the subtraction of decimal fractions.

1) One uses grid decimals (see attached sheet). This subtraction can be shown by shading the original number, and then shading the number to be subtracted. The remainder of the original number is the result of the subtraction. The corresponding subtraction problem can be written down at the same time.

2) A second activity is to use a decimal abacus. The original number is represented by beans or chips on the abacus, and the number to be subtracted is then taken away. The result of the subtraction is left on the abacus. Again, the corresponding subtraction problem can be written down and discussed.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

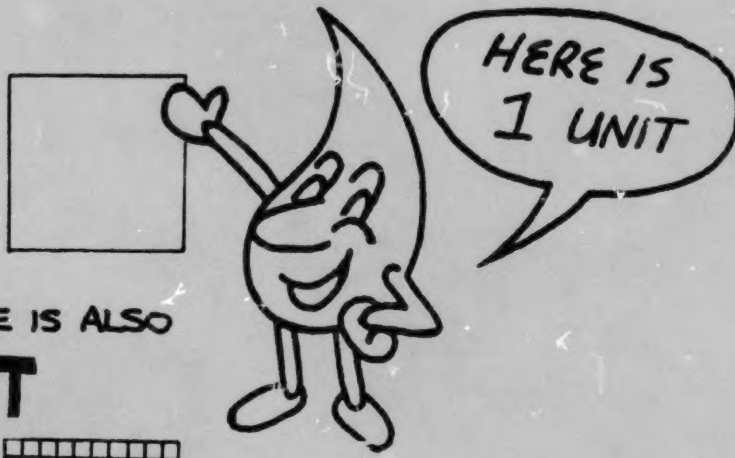
Given a teacher made test, the student will be able to subtract decimal fractions using basic subtraction facts.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

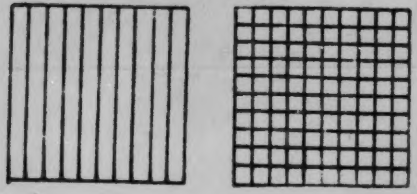
Teacher: ____
Signature **Title**

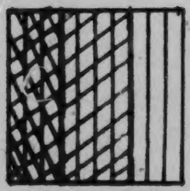
GRID DECIMALS


HERE IS 1 UNIT

EACH OF THESE IS ALSO

1 UNIT





TO SHOW $\begin{array}{r} .7 \\ \underline{-.3} \end{array}$

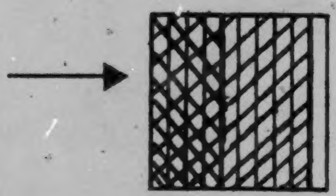
A. LIGHTLY SHADE .7
B. DARKEN 3 OF THE SHADED TENTHS.

HERE ARE SOME MORE

SHOW

$\begin{array}{r} .9 \\ \underline{-.4} \end{array}$

A. LIGHTLY SHADE .9
B. DARKEN 4 OF THE SHADED TENTHS



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age** __________
Last First **or**
Grade __________

Content Area General Math **Skills List No.** 38100, 38400, 38700, 39000
Sight & Sound No. 8.0.10.3

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract decimal fractions using borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher can prepare a couple of activites that deal with the subtraction of decimal fractions.

1) One uses grid decimals (see attached sheet). This subtraction can be shown by shading the original number, and then shading the number to be subtracted. The remainder of the original number is the result of the subtraction. The corresponding subtraction problem using the correct borrowing techniques is then written down and is discussed.

2) A second activity uses a decimal abacus. The original number is represented by beans or chips on the abacus, and the number to be subtracted is then taken away. The result of the subtraction is left on the abacus. Again, the corresponding subtraction problem is written down and solved using the correct borrowing techniques.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

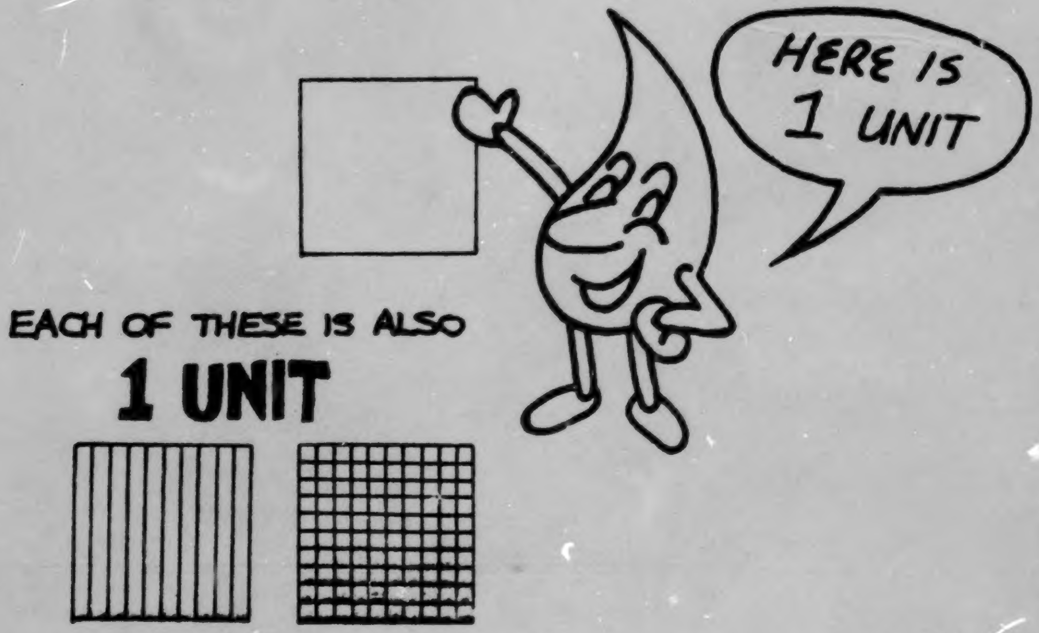
Given a teacher made test, the student will be able to subtract decimal fractions using borrowing.

Total Days Participation ____________ **out of a possible** ________________

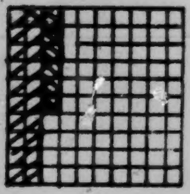
Criterion Attained: Yes ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

GRID DECIMALS


HERE IS
1 UNIT
EACH OF THESE IS ALSO
1 UNIT

TO SHOW
.26
-.07



A. LIGHTLY SHADE .26
B. DARKEN 7 OF THE SHADED HUNDRETHS

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________________ **Age or Grade** ______________
Last First

Content Area General Math **Skills List No.** 38100, 38400, 38700, 39000
Sight & Sound No. 8.0.10.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract a decimal fraction from a whole number.

Activities: What will be done, when, how much (time), by whom?

The teacher can prepare a couple of activities that deal with the subtraction of a decimal fraction from a whole number.

1) One uses grid decimals (see attached sheet). This subtraction can be shown by shading the original number and then shading the number to be subtracted. The remainder of the original number is the result of the subtraction. The corresponding subtraction problem using the correct borrowing techniques is then written down and discussed.

2) A second activity uses a decimal abacus. The original number is represented by beans or chips on the abacus, and the number to be subtracted is taken away. The result of the subtraction is left on the abacus. Again, the corresponding subtraction problem is written down and solved using the correct borrowing techniques.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

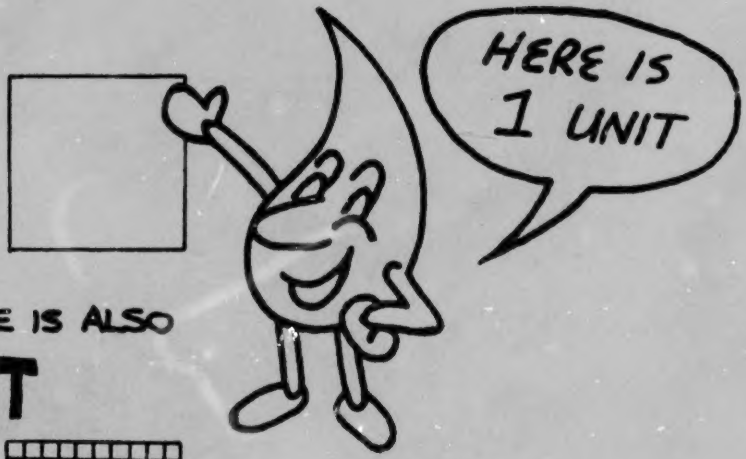
Given a teacher made test, the student will be able to subtract a decimal fraction from a whole number.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

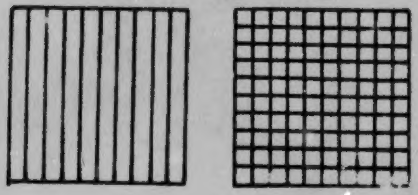
Teacher: ____
Signature Title

GRID DECIMALS



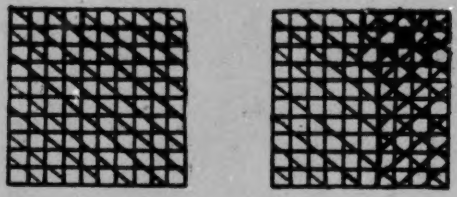
EACH OF THESE IS ALSO

1 UNIT



SHOW

$$\begin{array}{r} 2 \\ -\ .43 \\ \hline \end{array}$$



A. SHADE LIGHTLY 2
B. DARKEN 43 OF THE SHADED HUNDRETHS

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: __________ **District:** __________ **Area** __________

For Dates __________ **to** __________

Student Name __________ **Last** __________ **First** **Age or Grade** __________

Content Area General Math **Skills List No.** 38100, 38400, 38700, 39000
Sight & Sound No. 8.0.10.5

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract decimal fractions using borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher can prepare a couple of activities that deal with the subtraction of decimal fractions.

1) One uses grid decimals (see attached sheet). This subtraction can be shown by shading the original number, and then shading the number to be subtracted. The remainder of the original number is the result of the subtraction. The corresponding subtraction problem using the correct borrowing techniques is then written down and discussed.

2) A second activity uses a decimal abacus. The original number is represented by beans or chips on the abacus, and the number to be subtracted is taken away. The result of the subtraction is left on the abacus. Again, the corresponding subtraction problem is written down and solved using the correct borrowing techniques.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

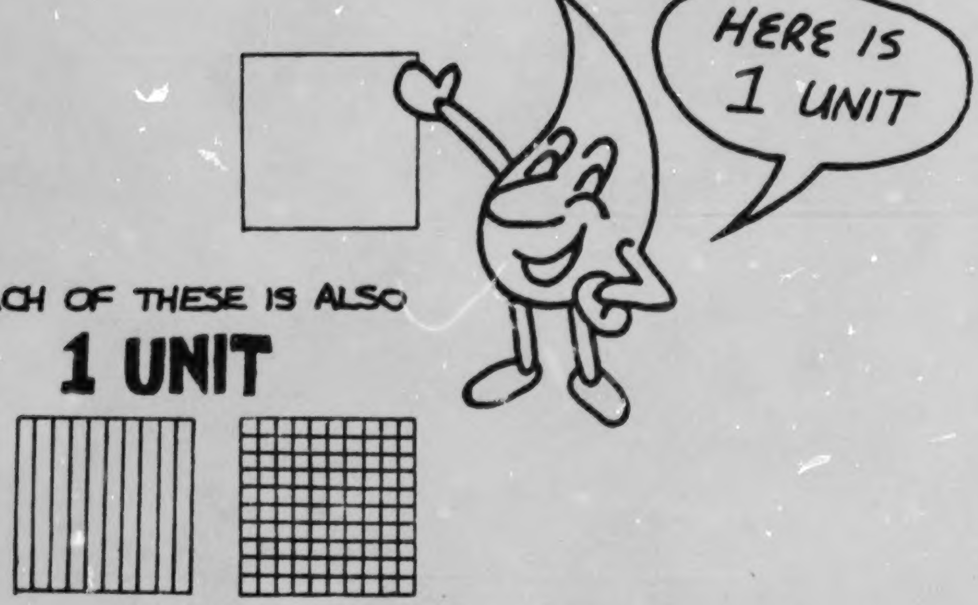
Given a teacher made test, the student will be able to subtract decimal fractions using borrowing.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

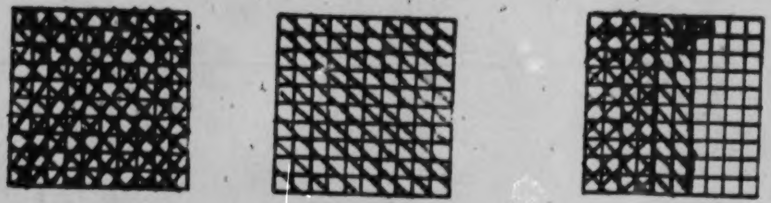
Teacher: __________ **Signature** __________ **Title**

GRID DECIMALS



EACH OF THESE IS ALSO
1 UNIT

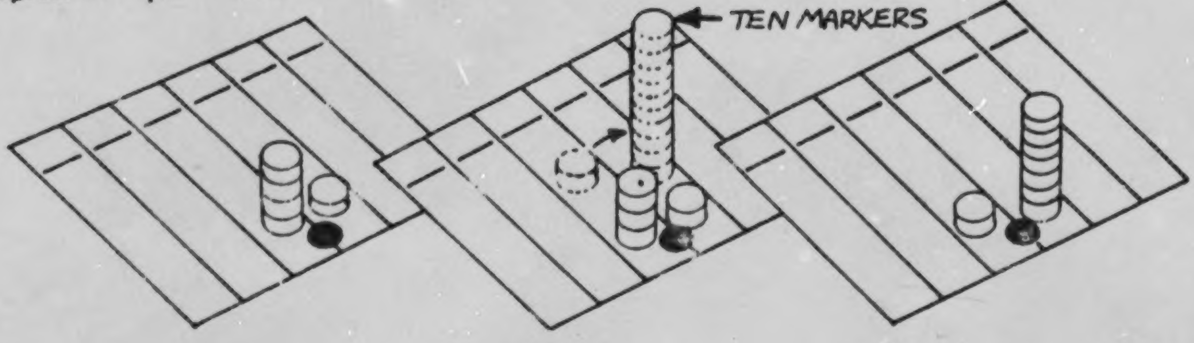
SHOW
$$\begin{array}{r} 2.51 \\ -\ 1.43 \\ \hline \end{array}$$



A. SHADE LIGHTLY 2.61

B. DARKEN 1 WHOLE UNIT PLUS 43 OF THE SHADED HUNDRETHS

SUBTRACT: 4.1 - 2.4


TEN MARKERS

I need to subtract
4 markers from the
tenths' place.

SUBTRACT: 4.1 - 2.4

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ ______________ **Age** ______________
Last First **or**
Grade ______________

Content Area General Math **Skills List No.** 16200, 17100, 18000, 18300
Sight & Sound No. 8.0.11.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to do his basic multiplication facts through 10 times 10.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that basic multiplication is a quick way for a repeated addition. Thus 3 x 7 is equivalent to 7 + 7 + 7 and so on. The teacher also will point out that it is also 3 + 3 + 3 + 3 + 3 + 3 + 3. After this has been done, a blank multiplication grid is introduced and the student will fill it out, noticing the patterns develop. With this done, work between the teacher and the student with a set of flash cards will be important.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to do basic multiplications using the facts of 0 x 0 through 10 x 10.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age** ______________
Last First **or**
Grade ______________

Content Area General Math **Skills List No.** 16200, 17100, 18000, 18300
Sight & Sound No. 8.0.11.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply a whole number by a single digit number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will get out a set of bean sticks. She will then describe the operation of bean stick multiplication to the student and go through the operation with the student, at the same time, the corresponding multiplication problem will be done on paper.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply a whole number by a single digit number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature Title

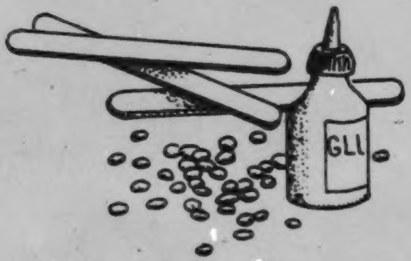
BEANSTICKS

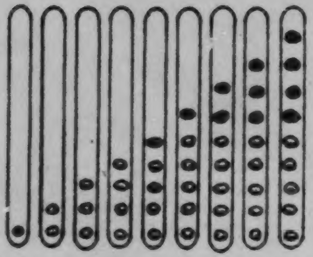
Beansticks are helpful models in understanding place value and operations with whole numbers.

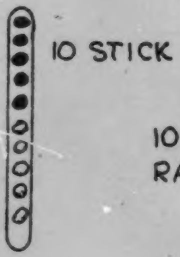
Construction Information:

Make a set of beansticks using dried beans of various kinds, wooden popsicle sticks and glue. There is no standard set of sticks--the size of a set varies with its uses. You will find a set such as the one illustrated below useful.

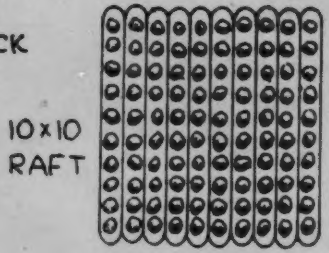
To make the bean sticks last longer without repair, run some glue over the top of the beans after the beans are glued on.



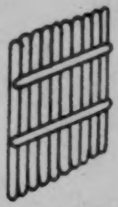

MAKE 3 OF EACH



MAKE 10



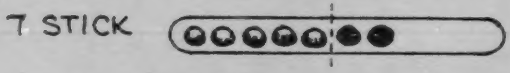
MAKE 2


(HOLD 10 STICKS TOGETHER WITH 2 STICKS GLUED ON THE BACK.)

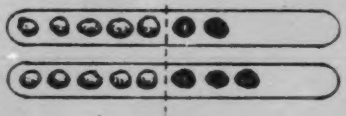
Beansticks can be constructed by the children at almost no cost. Used popsicle sticks can be collected and run through a dishwasher, or new popsicle sticks could be purchased through a restaurant supply house. Your PTA may be persuaded to find enough beans or have the students bring some. There is already a supply of "white glue" in most school warehouses.

Beansticks can also be made by drawing circles on the popsicle sticks with felt pens. Small checkers or poker chips could also substitute for loose beans.

The most efficient method of showing numbers greater than 5 is to place 5 beans on one end and the rest on the other. To make the number even clearer, two colors may be used:



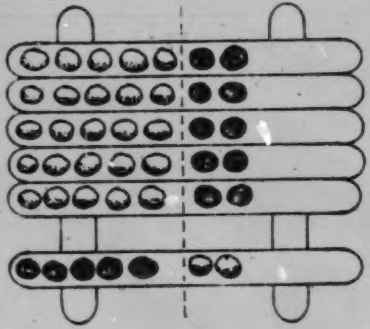
Then when you add 7 + 8, it looks like this:



It is easy to see 10 and 5 are 15.

Rafts are beansticks with the same number of beans, attached together to illustrate a product. Rafts can be made so that the total is easy to see without counting:

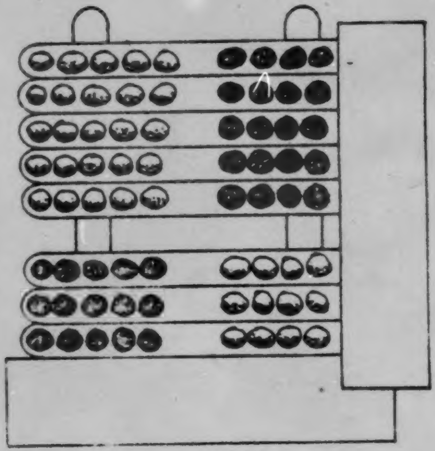
Here is a 6 x 7 raft:



25 + 10 + 5 + 2 = 42
so 6 x 7 = 42

A ten x ten raft can be used instead of other rafts. A student can use two cards to fence off the combination that he needs:

Here is a fenced 10 x 10 raft showing 8 x 9:



Readiness Activities:

1) Have students construct the beansticks.

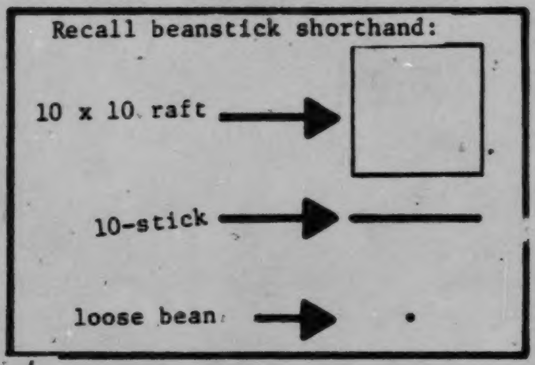
2) Have students sort the beansticks and play trading games.

3) Have students show various numbers using the beansticks.

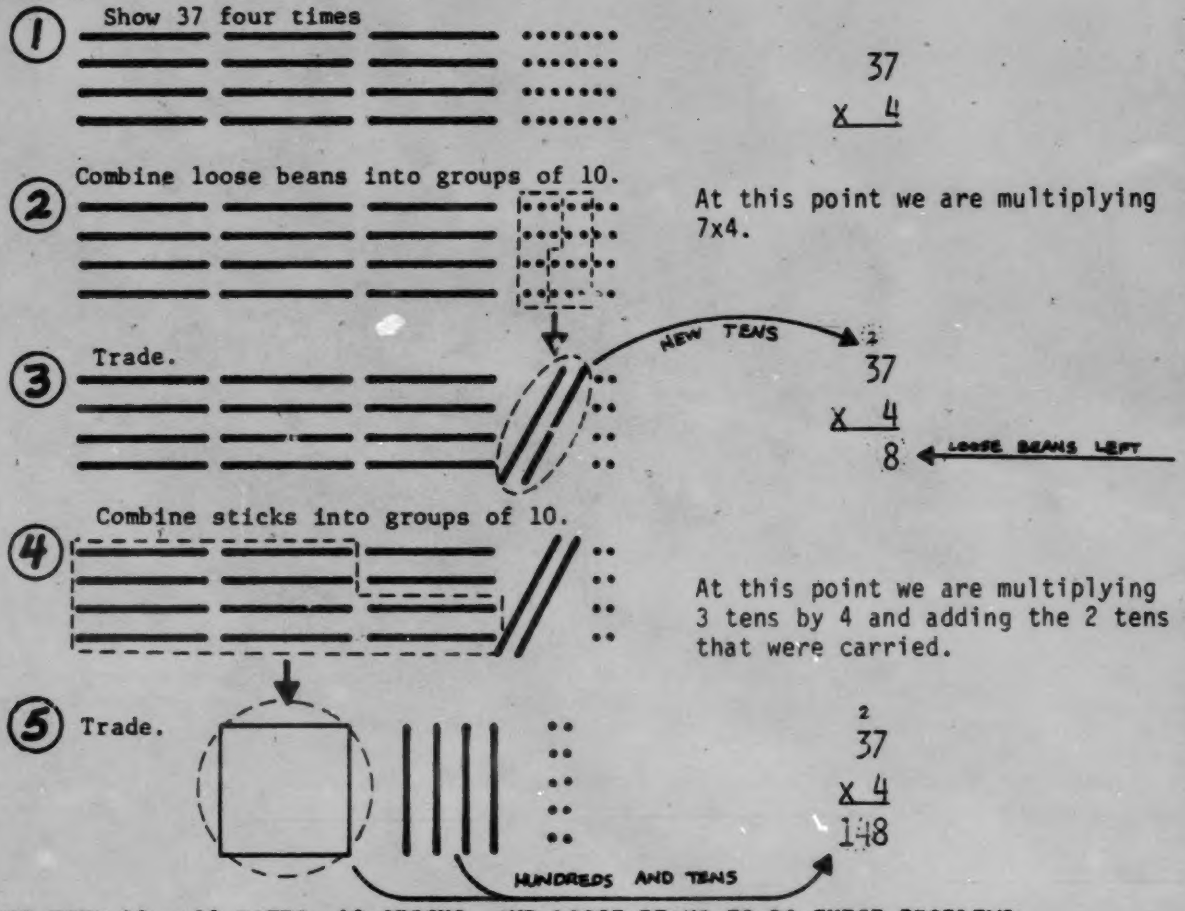
4) See *Chip Trading* in WHOLE NUMBERS: Concepts for a variety of place value games that could be played with beansticks.

ACTIVITY CARDS · BEANSTICKS

MULTIPLICATION IN BEANSTICK SHORTHAND


Recall beanstick shorthand:
10 x 10 raft
10-stick
loose bean

To MULTIPLY 37 x 4


①
Show 37 four times
37
x 4
②
Combine loose beans into groups of 10.
③
Trade.
NEW TENS
2
37
x 4
8
LOOSE BEANS LEFT
④
Combine sticks into groups of 10.
⑤
Trade.
2
37
x 4
148
HUNDREDS AND TENS

At this point we are multiplying 7x4.

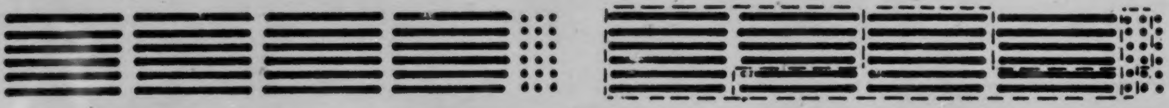
At this point we are multiplying 3 tens by 4 and adding the 2 tens that were carried.

USE YOUR 10 x 10 RAFTS, 10-STICKS, AND LOOSE BEANS TO DO THESE PROBLEMS. Record your work.

$\begin{array}{r}46\\ \underline{x\ 5}\end{array}$ $\quad$ $\begin{array}{r}63\\ \underline{x\ 2}\end{array}$ $\quad$ $\begin{array}{r}29\\ \underline{x\ 4}\end{array}$ $\quad$ $\begin{array}{r}78\\ \underline{x\ 3}\end{array}$ $\quad$ $\begin{array}{r}42\\ \underline{x\ 5}\end{array}$

ACTIVITY CARDS - BEANSTICKS (CONTINUED)

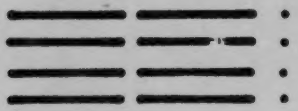
GIVE A MULTIPLICATION PROBLEM, COMBINE WHERE NECESSARY (SEE EXAMPLE) AND GIVE THE ANSWER FOR EACH.



EXAMPLE: 43 x 6 → →

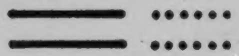
43
x 6
258

①



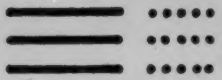
21
x 4
___

②



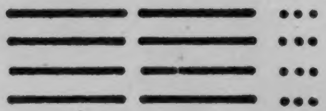
x 2

③



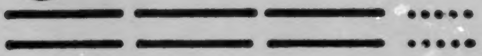
x ___

④



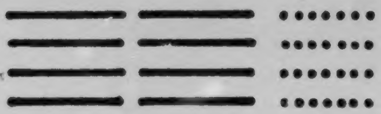
x ___

⑤



x ___

⑥



x ___

DRAW YOUR OWN SKETCH AND FIND THE ANSWER FOR THESE.

⑦

12
x 2

⑧

46
x 5

⑨

37
x 4

⑩

45
x 2

⑪

17
x 5

⑫

29
x 6

Form OF 6

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ____________ **to** ______________

Student Name ______________________________________ **Age** __________
Last First **or**
Grade __________

Content Area ______________________ **Skills List No.** 18302, 18305, 18311
Sight & Sound# 8.0.12.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply a number by 10, 100, or 1000.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will review with the student the set of multiplication facts involving 10 and the numbers 1 - 10. The fact that each product is always the base number with a zero on the right hand side is noted. The teacher then will give the student a couple of other problems involving a whole number larger than 10, and the number 10. The student should be able to carry the pattern over. The teacher then will give the student some problems involving 100 times a whole number. Again, the pattern of the whole number with two zeros on the right hand side as a product will be noted. The student will then be able to surmise what the product of 1000 and a whole number will be.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply a whole number by 10, 100, or 1000.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ______________________________________ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** 18302, 18305, 18311
Sight & Sound No. 8.0.12.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply a whole number by a multiple of 10, 100, or 1000.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will show the student a problem like 30 x 6. A review of his basic facts will reveal that 30 is the same as 10 x 3. If 30 is replaced by 10 x 3, the student can first use his basic multiplication to find 3 x 6 = 18, and then 18 x 10 = 180. A multiple of 100 or 1000 times a whole number will be presented in a like fashion. After the concept is understood, the problem is set up in a more standard fashion and done.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply whole numbers by a multiple of 10, 100, or 1000.

Total Days Participation ____________ **out of a possible** ______________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age or Grade** ______________
Last **First**

Content Area General Math **Skills List No.** 18600
Sight & Sound No. 8.0.13

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply large numbers by a single digit (for example 6 x 723).

Activities: What will be done, when, how much (time), by whom?

The teacher will give a problem like 6 x 723 to the student. She will note that the multi digit number, 723, is equivalent to 700 + 20 + 3, and that the student will be multiplying 6 times each of these three numbers. The student, having done these three multiplications, will have the products 4200, 120, and 18. Adding these three numbers will give the product 4338. After the student understands this process, the teacher will write the problem in a more standard form; $\begin{array}{r}723\\ \times\ 6\\ \hline\end{array}$, and do the multiplication, noting that the digits have the values previously stated, and doing the correct carrying procedure.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to multiply a large number by a single digit.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ Last ______________ First ______________ **Age or Grade** ______________

Content Area General Math Skills List No. 18306, 18307, 18308, 18309, 18310, 18311, 18603, 18604, 18605, 18606, 18607 Sight & Sound No. 8.0.14

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply a whole number by a two digit number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that multiplying a whole number by a two digit number (for example 67 x 423) is a culmination of all the multiplication skills he has accumulated. The first thing to remember is that 67 is equal to 60 + 7. This makes the problem read:

$$\begin{array}{r}423\\ \times 60\\ \hline\end{array} + \begin{array}{r}423\\ \times 7\\ \hline\end{array}, \quad \begin{array}{r}423\\ \times 7\\ \hline 2961\end{array}; \quad \begin{array}{r}423\\ \times 60\\ \hline 25380\end{array}$$

Adding the two products together equals 28,341. The teacher can then state that the problem need not be rewritten if the student remembers what the value of each multiplier is. The problem becomes

$$\begin{array}{r}423\\ \times 67\\ \hline 2961\\ 25380\\ \hline 28341\end{array}$$

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply a whole number by a two digit number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ Signature ______________ Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math Skills List No. 18306, 18307, 18308, 18309, 18310, 18311, 18603, 18604, 18605, 18606, 18607 Sight & Sound No. 8.0.14

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply a whole number by a three digit number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that multiplying a whole number by a three digit number is an extension of multiplying by a two digit number. In multiplying 3263 x 547; expand 547 into 500 + 40 + 7. This makes the problem

$$\begin{array}{r}3263\\ \underline{\times 500}\end{array} + \begin{array}{r}3263\\ \underline{\times 40}\end{array} + \begin{array}{r}3263.\\ \underline{\times \ \ 7}\end{array}$$

Doing each multiplication gives

$$\begin{array}{r}3263\\ \underline{\times 500}\\ 1631500\end{array} + \begin{array}{r}3263\\ \underline{\times 40}\\ 130520\end{array} + \begin{array}{r}3263.\\ \underline{\times \ \ 7}\\ 22841\end{array}$$

Adding these products gives 1,784,861.

The teacher can then state that the problem need not be rewritten if the student realizes what the value of each multiplier represents; the problem becomes:

$$\begin{array}{r}3263\\ \underline{\times 547}\\ 22841\\ 130520\\ \underline{+1631500}\\ 1784861\end{array}$$

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply a whole number by a three digit number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math **Skills List No.** 39300, 39600
Sight & Sound No. 8.0.15.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply decimal numbers using grid decimals.

Activities: What will be done, when, how much (time), by whom?

The teacher can prepare an excellent activity for the student using grid decimals. The student marks off one of the multipliers on one edge of the grid decimal, and the second number on the adjoining edge. The result of the multiplication can be found by counting the number of squares in the rectangle bounded by the two adjoining sides. At the same time, the corresponding multiplication problem can be written down with its answer, and a method for arriving at it can be discussed.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

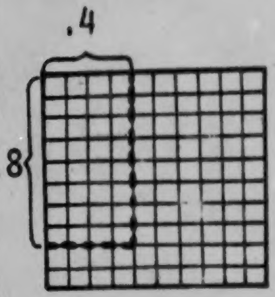
Given a teacher made test, the student will be able to multiply decimal numbers using a grid decimal.

Total Days Participation ______________ **out of a possible** ______________

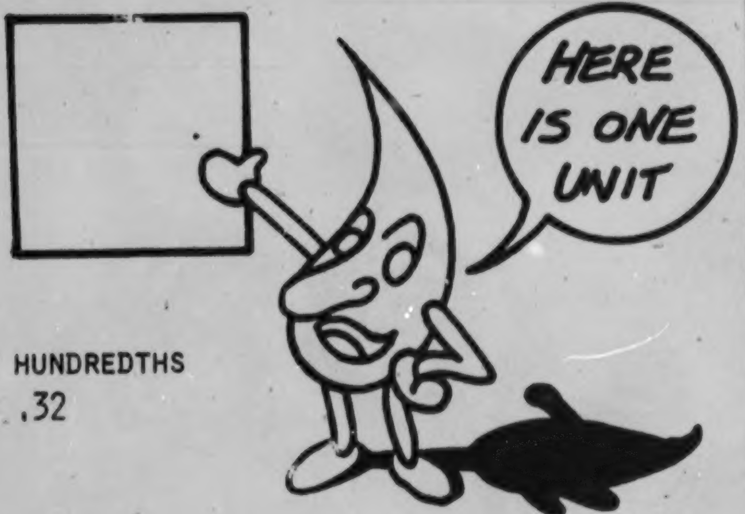
Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature **Title**

GRID DECIMALS - III



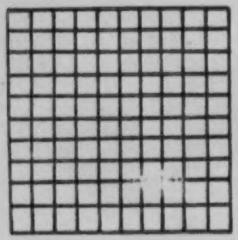
.4 x .8 = 32 HUNDREDTHS
OR .32

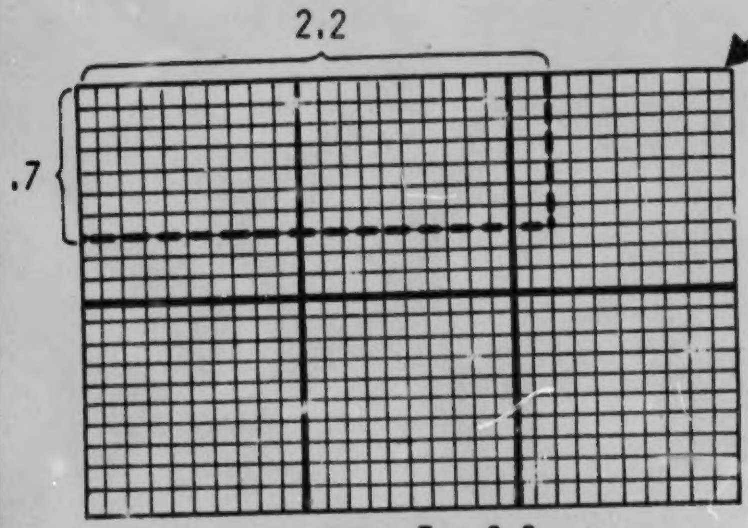


USE A GRID TO SOLVE THE FOLLOWING PROBLEMS:

.2 x .4 =
.3 x .7 =
.1 x .9 =
.8 x .7 =
.9 x .9 =
.15 x .4

BE CAREFUL





EXAMPLE .7 x 2.2

USE A GRID TO HELP YOU SOLVE THE FOLLOWING:

.7 x 2.2 = 154 HUNDREDTHS
OR 1.54

.5 x 1.3 =

2.5 x .3 =

1.1 x 1.3 =

1.5 x 2.4 =

IDEA FROM: *C.O.L.A.M.D.A.*

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Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ (Last) (First) **Age** ______ or **Grade** ______

Content Area General Math **Skills List No.** 39300, 39600

Sight & Sound No. 8.0.15.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply with decimals using the estimation method.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use an activity involving estimation to multiply decimals. In multiplying 46.36 x 2.1, the student rounds each number off to the nearest whole number. This makes the product 46 x 2 or 92. The student then multiplies the two numbers 46.36 but ignores the decimal points. This makes the problem look like 4636
x 2.1 x 21

giving a result of 97356. The estimate 92 and this number, 97356 is compared. A decimal point is placed to come closest to the estimate of the choices .97356, 9.7356, 97.356, 973.56, 9735.6, or 97356; 97.356 is the closest.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply with decimals using the estimation method.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________________ ______________________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age** ______________
Last First
or
Grade ______________

Content Area General Math **Skills List No.** 39300, 39600
Sight & Sound No. 8.0.15.3

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply decimal numbers using the decimal-place method.

Activities: What will be done, when, how much (time), by whom?

The teacher can demonstrate to the student the decimal-place method after the student is confident with the estimation method. The teacher does several problems with the student using the estimation method, writing down the problem and its answer in the usual vertical form (for example 2.8).

$$\begin{array}{r} 2.8 \\ \times 1.2 \\ \hline 3.36 \end{array}$$

After this is done, the student is asked if he sees a pattern to the placement of the decimal point. With the guidance of the teacher, he will see that the number of digits to the right of the decimal point in the answer will equal the total number of digits to the right of the decimal point in both multipliers.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to multiply decimal numbers using the decimal-place method.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age** ______________
Last First or
Grade ______________

Content Area General Math **Skills List No.** 39300, 39600
Sight & Sound No. 8.0.15.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply a decimal number by 10, 100, or 1000.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a pair of decimal abaci (see attached sheet) to demonstrate multiplication. The teacher first uses multiplication of a whole number by 10 to show the technique. Then the demonstration shows multiplying a decimal number by 10. The result of the multiplication is then written down and compared to the original problem. The student will then, with direction, discover the rule for moving the decimal point when multiplying by 10, 100, or 1000.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

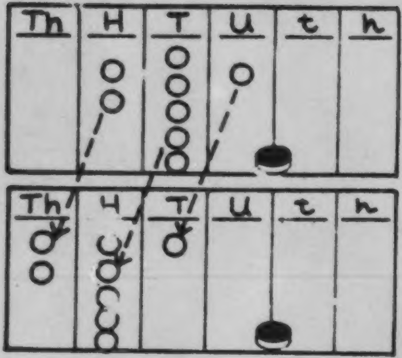
Given a teacher made test, the student will be able to multiply a decimal number by 10, 100, or 1000.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature Title

ACTIVITY CARDS - DECIMAL ABACUS - IV


Th
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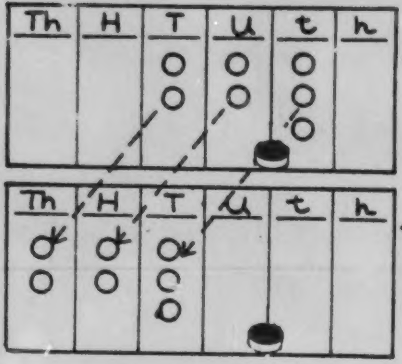
This shows 251

This shows 2510

so:

251 x 10 = 2510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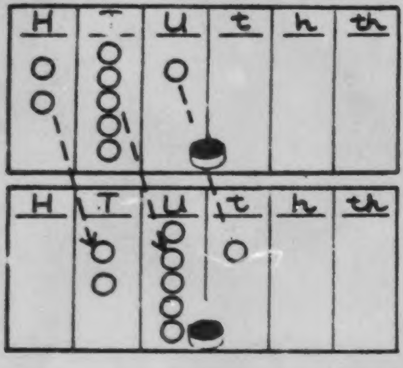
This shows ______

This shows ______

so:

______ x 100 = ______


H
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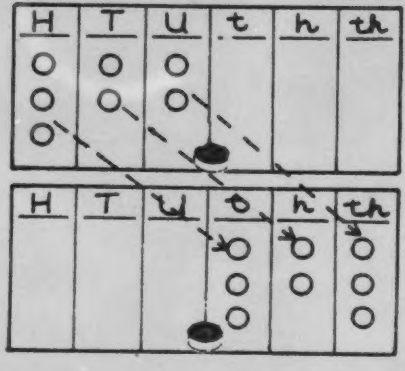
This shows 251

This shows ______

so:

251 ÷ 10 = ______


H
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H
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h
th

This shows ______

This shows ______

so:

______ ÷ 1000 = ______

Complete the sentences and check using two abaci.

332 x 10 = ______

4.8 x 100 = ______

670 ÷ 10 = ______

1.78 ÷ 10 = ______

41 ÷ 1000 = ______

50.6 x 10 = ______

842 ÷ 100 = ______

56 ÷ 100 = ______

910 x 100 = ______

.08 x 10 = ______

72.1 ÷ 10 = ______

.003 x 100 = ______

Use two abaci to compare the numbers in each problem. Complete each sentence.

93 x ______ = 930

4800 ÷ ______ = 480

43.1 ÷ ______ = .431

.046 x ______ = 460

5100 ÷ ______ = 510

7.48 x ______ = 74.8

.801 ÷ ______ = .0801

.076 x ______ = 76

.86 x ______ = 860

IDEA FROM: *The School Mathematics Project*, Book C

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Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age** ____________
Last First **or**
Grade ____________

Content Area General Math **Skills List No.** 21001, 21301
Sight & Sound No. 8.0.16.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to do basic division through the use of manipulatives.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use a couple of activities to demonstrate basic division. Just as multiplication is repeated addition, division is repeated subtraction. The subtraction demonstration (see attached sheet) demonstrates this concept. After the subtraction is completed, the corresponding division problem is written down. Beansticks (see attached sheet) can also be used effectively. Represent the number to be divided into with beansticks, and the divisor by the number of groups to be divided equally between. The answer will be the number of beans in each group. The division problem will then be written down in its usual fashion.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide using repeated subtraction and beansticks.

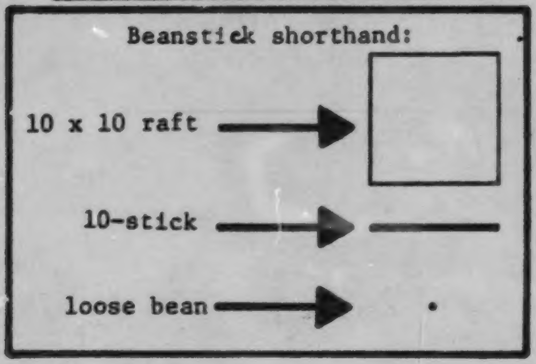
Total Days Participation ______________ **out of a possible** ____________________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

ACTIVITY CARDS - BEANSTICKS

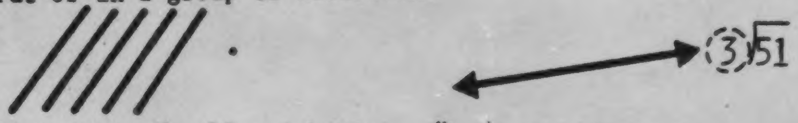
DIVISION IN BEANSTICK SHORTHAND


Beanstick shorthand:
10 x 10 raft
10-stick
loose bean

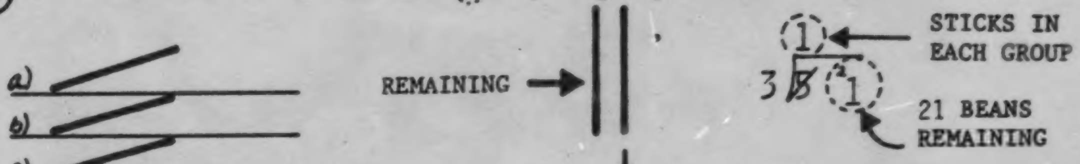
To **DIVIDE** 51 by 3

① Put 51 in a group to work with.

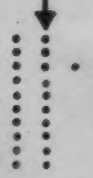
WRITE:



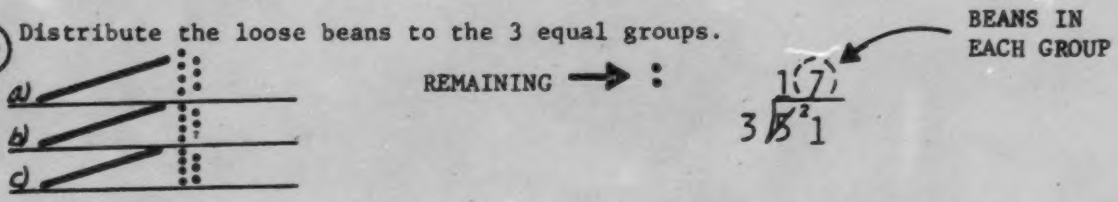
② Distribute the 10-sticks into 3 equal groups.

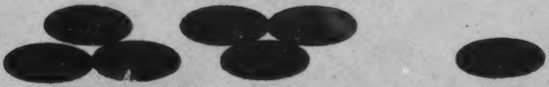

a)
b)
c)
REMAINING
1
3)5²1
STICKS IN EACH GROUP
21 BEANS REMAINING

③ Exchange remaining 10-sticks.



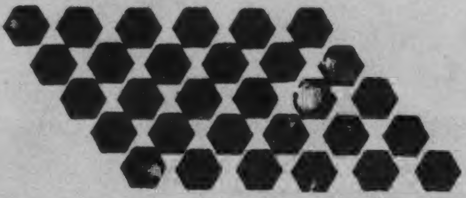
④ Distribute the loose beans to the 3 equal groups.


a)
b)
c)
REMAINING
BEANS IN EACH GROUP
17
3)5²1



HOW MANY GROUPS — HOW MANY LEFT ?

To solve a division problem using the repeated subtraction method, you want to think of your problem this way:



30 ÷ 6 means how many 6's in 30.

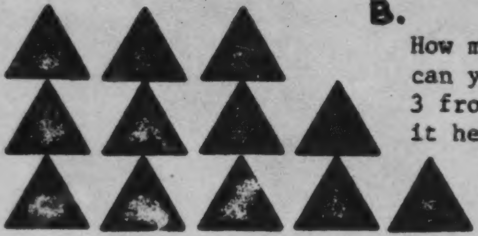
Circle groups of 6's until you have less than 6 left.

How many groups are there? _____

How many left? _____

1. A.

Find how many groups of 3 are in this pile by circling 3 at a time.



_____ ÷ _____ = _____

B. 12

How many times can you subtract 3 from 12? Do it here.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ______________________________________ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** 21001, 21301
Sight & Sound No. 8.0.16.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to divide a one digit number into a two digit number with no remainder.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that finding a division answer is the same as looking for a multiplier in a multiplication problem. That is 64 ÷ 4 = what is equivalent to 4 x what = 64. The problem is then solved as a multiplication problem, using estimation. The 4 in 64 is in the 10's place. Therefore, we start looking for the largest multiplication problem involving multiples of 10 that is less than or equal to 64. 4 x 10 = 40, 4 x 20 = 80, so our missing number must be between 10 and 20. Placing a 1 in the 10's place represents this 10, leaving 24 from our original 64. The next question to ask is 4 x what = 24 (the remainder). Since 4 x 6 = 24, a 6 is placed in the units place, and the product, 24, is placed in the body of the division product. Since there is no remainder, the problem is finished.

$$\begin{array}{r} 1 \\ 4\,\overline{)64} \\ 40 \\ \hline 24 \end{array}$$

$$\begin{array}{r} 16 \\ 4\,\overline{)64} \\ 40 \\ \hline 24 \\ 24 \\ \hline 0 \end{array}$$

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide a two digit number by a one digit number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** __________ **No** __________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________________ **District:** ____________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ____________________________________ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** ____________________
Sight & Sound No. 8.0.17

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a three digit number by a one digit number.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 508 ÷ 4 = what is the same as 4 x what = 508. The problem is then solved as a multiplication problem using estimation. The 5 in 508 is in the 100's place. Therefore, we start looking for the largest multiplication problem involving multiples of 100 and 4 that is less than or equal to 508. 4 x 100 = 400, and 4 x 200 = 800. This means 4 will divide into 508 more than 100 times, but less than 200 times. A 1 is placed in the hundreds place, and the difference in this product, 400, and the number, 508, is written down. The next place is the 10's place. Again, the largest number involving 4 and a multiple of this location, 10's place, is looked for. 4 x 20 = 80, 4 x 30 = 120, so a 2 to represent 20 is placed in the 10's place. The difference, 28, is then written down. The final multiplication is to determine 4 x what = 28. Since this is 7, a 7 is placed into the units place.

$$\begin{array}{r} 1 \\ 4\,\overline{)508} \\ -400 \\ \hline 108 \end{array} \qquad \begin{array}{r} 12 \\ 4\,\overline{)508} \\ -400 \\ \hline 108 \\ -80 \\ \hline 28 \end{array} \qquad \begin{array}{r} 127 \\ 4\,\overline{)508} \\ -400 \\ \hline 108 \\ -80 \\ \hline 28 \\ -28 \\ \hline 0 \end{array}$$

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide a three digit number by a one digit number.

Total Days Participation ______________ **out of a possible** ____________________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________ ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ____ **Age** __________
Last **First** **or**
Grade __________

Content Area General Math **Skills List No.** ______________________
Sight & Sound No. 8.0.18

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a four digit number by a one digit number.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 5052 ÷ 4 = what is the same as 4 x what = 5052. The problem is then solved as a multiplication problem using estimation. The 5 in 5052 is in the 1000's place. Therefore, we start looking for the largest multiplication problem involving 4 and multiples of 1000 that is less than or equal to 5052. 4 x 1000 = 4000, and 4 x 2000 = 8000. This means that 4 will divide into 5052 more than 1000 times, but less than 2000 times. A 1 is placed in the 1000's place to represent the 1000, and the difference, 1052, between 5052 and the product, 4000, is placed below the 4000. In a similar fashion, the value for the digit in the 100's place, 10's place, and units place is derived.

```
       1           12          126         1263
  4 |5052     4 |5052     4 |5052     4 |5052
    -4000       -4000       -4000       -4000
     1052        1052        1052        1052
                - 800       - 800       - 800
                  252         252         252
                             -240        -240
                               12          12
                                          -12
                                            0
```

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide a four digit number by a one digit number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____ **Age** __________
Last **First** **or**
Grade __________

Content Area General Math **Skills List No.** 21002, 21003, 21004
Sight & Sound No. 8.0.19

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to divide by a two digit number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 832 ÷ 16 = what is the same as 16 x what = 832. The problem is then solved as a multiplication problem using estimation. The 8 in 832 is in the 100's place. Therefore, we look for the largest multiplication problem involving 16 and multiples of 100 that is less than or equal to 832. 0 x 16 = 0, and 100 x 16 = 1600. 832 is between these two products, so the answer will be greater than 0, but less than 100. A 0 is placed in the hundreds place to represent zero hundred. The difference, 832, between the number and the product, 0, is written in the body of the problem. The next place is the 10's. 16 x 50 = 800 and 16 x 60 = 960. 832 is between these two numbers, so a 5, to represent 50, is placed in the 10's place. The difference, 32, is then written down. The final place is the units place, 16 x 2 = 32, so a 2 is written in the units place. Any whole number that has a leading zero may have it removed, so the number 052 becomes 52.

```
       0           05          052          052
16 |832     16 |832     16 |832     16 |832
    -000        -000        -000        -000
     832         832         832         832
                -800        -800        -800
                  32          32          32
                             -32         -32
                               0           0
```

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide a two digit number.

Total Days Participation ______________ **out of a possible** __________________

Criterion Attained: **Yes** ____________ **No** ______________ **Date** ________________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________________ **Age or Grade** __________
Last **First**

Content Area General Math **Skills List No.** 20700, 21301
Sight & Sound# 8.0.20.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to divide by a one digit number with the remainder listed as a fraction.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 40 ÷ 3 = what is the same as 3 x what = 40. The problem is solved as a multiplication problem using estimation. The 4 in 40 is in the 10's place. Therefore, we look for the largest multiplication problem involving 3 and a multiple of 10 that is less than or equal to 40. 4 x 10 = 40, and 4 x 20 = 80. 40 is between these two products, so the answer will be between 10 and 20. The product, 30, is subtracted from the original number, leaving 10, which is placed in the body of the problem. The next step is to find a unit digit to multiply times 3 that will give the largest product less than or equal to 10. 3 x 3 = 9, and 3 x 4 = 12. A 3 is placed in the units place and the product, 9, is subracted, giving a remainder of 1. At this point, the problem could be thought of in this way: If 3 children were going to divide 40 jelly beans equally, how many could each one have? There are 13 a piece, with 1 left over. This fact, which is less than the number of children, means that there are not enough to give 1 more to each child. The remaining must be divided evenly between the 3 children, giving each child 1/3 of a jelly bean. Thus, each child gets 13 1/3 jelly beans.

```
    1         13         13 1/3
 3 |40     3 |40      3 |40
   -30       -30        -30
              10         10
             - 9        - 9
               1          1
```

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide by a one digit number with the remainder listed as a fraction.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math **Skills List No.** 20700, 21301
Sight & Sound No. 8.0.20.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide by a one digit number, with the result involving a remainder.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the beanstick activity (see attached sheet) and repeated subtraction (see attached sheet) as a prelude to the pencil and paper division. After this is completed, the teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 71 ÷ 5 = what is the same as 5 x what = 71. The problem is solved as a multiplication problem using estimation. The 7 in 71 is in the 10's place. Therefore, we look for the largest multiplication problem involving 5 and a multiple of 10 that is less than or equal to 71. 5 x 10 = 50, and 5 x 20 = 100. 71 is between these two products, so the answer will be greater than 10, but less than 20. The product, 50, is subtracted from the original number, and the difference, 21, is written in the body of the problem. The next step is to find a unit number x 5 to be less than or equal to 21. 5 x 4 = 20, and 5 x 5 = 25, since 21 is between these two products, the 4 is placed in the units place, and the product, 20, is subtracted, leaving a remainder of 1. Since the whole number spaces have been used, the remainder of the original division can be noted as a remainder.

$$\begin{array}{r} 1 \\ 5\overline{)71} \\ -50 \\ \hline 21 \end{array} \qquad \begin{array}{r} 14 \\ 5\overline{)71} \\ -50 \\ \hline 21 \\ -20 \\ \hline 1 \end{array} \qquad \begin{array}{r} 14\text{ R1} \\ 5\overline{)71} \\ -50 \\ \hline 21 \\ -20 \\ \hline 1 \end{array}$$

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide by a one digit number, with the result involving a remainder.

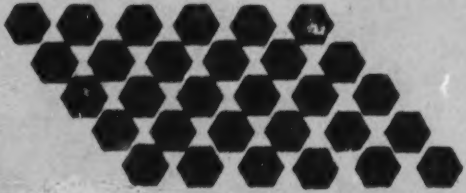
Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature **Title**

HOW MANY GROUPS — HOW MANY LEFT ?

To solve a division problem using the repeated subtraction method, you want to think of your problem this way:



30 ÷ 6 means how many 6's in 30.

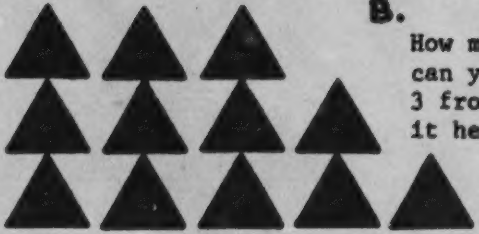
Circle groups of 6's until you have less than 6 left.

How many groups are there? _____

How many left? _____

1. A.

Find how many groups of 3 are in this pile by circling 3 at a time.



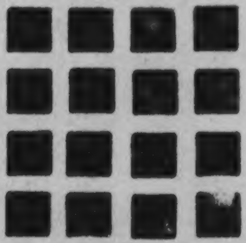
B.

How many times can you subtract 3 from 12? Do it here.

12

_____ ÷ _____ = _____ r _____

2 A. Find how many groups of 5 by circling.



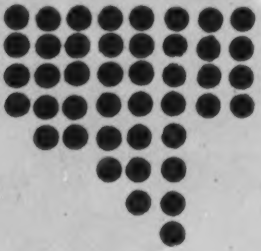
B.

How many times can you subtract 5 from 16? Do it here.

16

_____ ÷ _____ = _____ r _____

3.A. Find how many groups of 11 by circling.



B.

How many times can you subtract 11 from 59? Do it here.

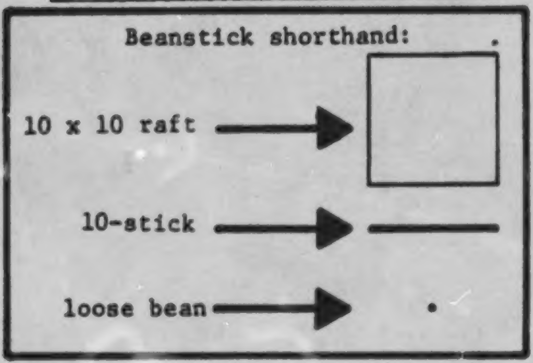
59

_____ ÷ _____ = _____ r _____

Make up some more problems of your own.

ACTIVITY CARDS - BEANSTICKS

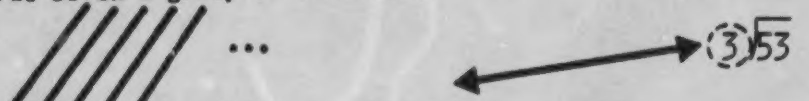
DIVISION IN BEANSTICK SHORTHAND


Beanstick shorthand:
10 x 10 raft
10-stick
loose bean

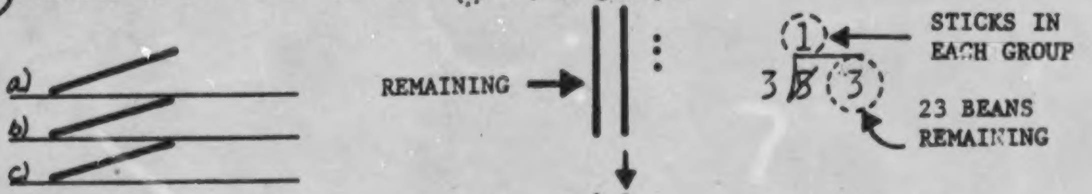
To DIVIDE 53 by 3

① Put 53 in a group to work with.

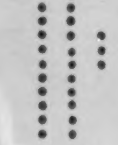
WRITE:



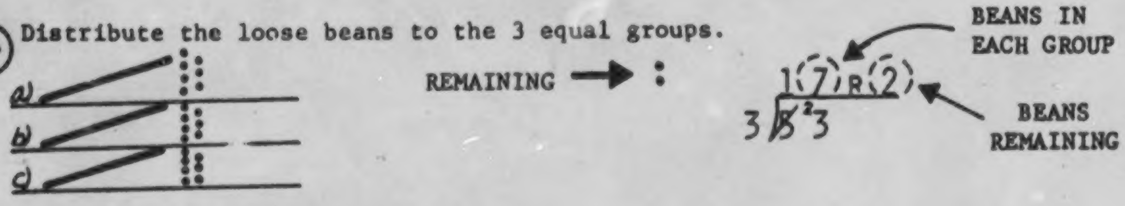
② Distribute the 10-sticks into ③ equal groups.


a)
b)
c)
REMAINING
1
STICKS IN EACH GROUP
3)5 3
23 BEANS REMAINING

③ Exchange remaining 10-sticks.



④ Distribute the loose beans to the 3 equal groups.


a)
b)
c)
REMAINING
BEANS IN EACH GROUP
1 7 R 2
3)5²3
BEANS REMAINING

USE YOUR 10-STICKS AND LOOSE BEANS TO DO THESE PROBLEMS.
RECORD YOUR WORK.

① $4\overline{)57}$ ② $6\overline{)82}$ ③ $5\overline{)99}$ ④ $3\overline{)78}$ ⑤ $2\overline{)64}$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** ___________

For Dates _____________ to _______________

Student Name ____ **Age** __________
Last **First** **or**
Grade __________

Content Area General Math **Skills List No.** 21302, 21303
Sight & Sound No. 8.0.21.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide by a two digit number, with the result involving a remainder.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 4433 ÷ 24 = what is the same as 24 x what = 4433. The problem is solved as a multiplication problem using estimation. The first 4 in 4433 is in the 1000's place. Therefore, we look for the largest multiplication problem involving 24 and a multiple of 1000, that is less than or equal to 4433. 0 x 24 = 0, and 1000 x 24 = 24000. Since 4433 is between these two products, this means that the answer is between 0 and 1000. A 0 is placed in the thousands column to represent zero thousands. The difference, 4433, between the number and the product, 0, is placed in the body of the problem. The next place is the 100's. 24 x 100 = 2400, and 24 x 200 = 4800. Since 4433 is between these two numbers, this means the answer is between 100 and 200. A 1 is placed in the hundreds spot to represent 100. The product, 2400, is subtracted, and the difference, 2033 is placed in the body of the problem. In a similar fashion, the 10's place and units place are dealt with. After multiplying 24 x 4, a remainder of 17 still exists from the original 4433. This amount is listed as a remainder.

```
        0            01           018          0184         0184 R17
 24 |4433    24 |4433    24 |4433    24 |4433    24 |4433
    -0000       -0000       -0000       -0000       -0000
     4433        4433        4433        4433        4433
                -2400       -2400       -2400       -2400
                 2033        2033        2033        2033
                            -1920       -1920       -1920
                              113         113         113
                                        -  96       -  96
                                           17          17
```

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide by a two digit number, with the result involving a remainder.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: Yes ___________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last**) ____________ (**First**) **Age or Grade** ____________

Content Area General Math **Skills List No.** 21302, 21303

Sight & Sound No. 8.0.21.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide by a two digit number with the remainder listed as a fraction.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 857 ÷ 46 = what is the same as 46 x what = 857. The problem is solved as a multiplication problem using estimation. The 8 in 857 is in the hundreds place. Therefore, we look for the largest product involving 46 and a multiple of 100. 46 x 0 = 0, and 46 x 100 = 4600. Since 857 is between these two products, the answer must be between 0 and 100. A 0 is placed in the hundreds column to represent zero hundreds. The next column is the 10's. 46 x 10 = 460, and 46 x 20 = 920. 857 is between these two numbers, so a 1 is placed in the 10's column to represent 1 ten. Finally, a product of 46 and a unit number is sought that is less than or equal to 397. 46 x 8 = 368, and 46 x 9 = 414. An 8 is placed in the units column, since the remainder, 29 is less than the divisor 46, no more division can be done using basic division facts. Write the remainder as the fraction 29/46.

```
      0            01            018           018 29/46
 46 |857      46 |857      46 |857      46 |857
    -000          -000          -000          -000
     857           857           857           857
                  -460          -460          -460
                   397           397           397
                                -368          -368
                                  29            29
```

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide by a two digit number, with the remainder listed as a fraction.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________ (**Signature**) ____________ (**Title**)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** __________
Last **First** **or**
Grade __________

Content Area General Math **Skills List No.** 21304, 21305
Sight & Sound No. 8.0.22.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide by a three digit number, with the remainder listed as a fraction.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 4475 ÷ 329 = what is the same as 329 x what = 4475. The problem is solved as a multiplication problem using estimation. The first 4 in 4475 is in the thousands place. Therefore, we look for the largest multiplication problem involving 329, and a multiple of 1000 that is equal to or less than 4475. 1000 x 329 = 329000, and 0 x 329 = 0. Since 4475 is between these two products, the answer must be between 0 and 1000. A 0 is placed in the thousands place to represent zero thousands. Checking the hundreds column finds that a zero must be located in this slot. The division continues until a 3 is placed in the units place, subtracting this product leaves a remainder of 198. Since this is smaller than the divisor, no more division can be done using basic division facts, and the remainder is written as 198/329, which is the remainder over the divisor.

```
        0              00             001             0013            0013 198/329
329 |4475      329 |4475      329 |4475      329 |4475      329 |4475
    -0000          -0000          -0000          -0000          -0000
     4475           4475           4475           4475           4475
                   -0000          -0000          -0000          -0000
                    4475           4475           4475           4475
                                  -3290          -3290          -3290
                                   1185           1185           1185
                                                 - 987          - 987
                                                   198            198
```

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide by a three digit number, with the remainder written as a fraction.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________ ______________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________ ______________ **Age or Grade** __________
Last **First**

Content Area General Math **Skills List No.** 21304, 21305
Sight & Sound No. 8.0.22.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide by a three digit number, with the result involving a remainder.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 9326 ÷ 572 = what is the same as 572 x what = 9326. The problem is solved as a multiplication problem using estimation. The 9 in 9321 is in the thousands place. Therefore, we look for the largest multiplication problem involving 572 and a multiple of 1000 that is less than or equal to 9326. 0 x 572 = 0, and 1000 x 572 = 572000. Since 9326 is between 0 and 572000, the answer must be between 0 and 1000. A 0 is placed in the thousands place to represent zero thousands. The difference, 9321, between the number and the product, 0, is placed in the body of the problem. The next place is the hundreds. 0 x 572 = 0 and 100 x 572 = 57200. Since 9326 is between 0 and 57200, a zero must also be placed in the hundreds place. 10 x 572 = 5720, and 20 x 572 = 11440. This means that our number is between 10 and 20, so a 1 is placed in the 10's column. As the division continues, a 6 is placed in the units column and a remainder of 174 still exists from the original 9326. This amount is listed as a remainder.

```
         0               00              001              0016            ~~00~~16 R174
572  |9326     572  |9326     572  |9326      572  |9326      572  |9326
     -0000          -0000          -0000           -0000           -0000
      9326           9326           9326            9326            9326
                    -0000          -0000           -0000           -0000
                     9326           9326            9326            9326
                                   -5720           -5720           -5720
                                    3606            3606            3606
                                                   -3432           -3432
                                                     174             174
```

Criterion: What specific evidence will we accept to indicate that the objective was attained?

The student will be able to divide by a three digit number with the result involving a remainder.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________ (Last) ______________________ (First) **Age or Grade** __________

Content Area General Math **Skills List No.** 40200
Sight & Sound No. 8.0.23

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a whole number by a whole number giving the remainder as a decimal.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. That is, 217 ÷ 5 = what is the same as 5 x what = 217. The problem is solved like all other division problems. When all of the whole numbers have been included, a remainder of 2 still exists. To have a decimal answer, the number being divided into must be rewritten as a decimal. 217 = 217.0 The problem can be rewritten 5 |217.0. The problem is modified so that all of the products, and differences, reflect the decimal point. The remainder at this point in the division is now 2.0, and the next column in the answer slot is the tenths. The question to be asked now is, 5 x how many tenths is 2.0. Since the answer is 4/10, a 4 is placed in this column, the product 2.0 is subtracted, giving a remainder of 0.0.

```
   043          043.4
5 |217      5 |217.0
  -000         -000.0
   217          217.0
  -200         -200.0
    17           17.0
  - 15          -15.0
     2            2.0
                - 2.0
                  0.0
```

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide a whole number by a whole number, giving the remainder as a decimal.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________ (Signature) ______________________ (Title)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ______________

Student Name ____ **Age** ____________
Last First **or**
Grade ____________

Content Area General Math **Skills List No.** 39902
Sight & Sound No. 8.0.24

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to divide a decimal number by a whole number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use an excellent exercise for this concept (see attached sheet). She can point out that the basic process for dividing into a whole number is to move the decimal point straight up, and then divide as if it didn't exist, once it has been moved. A third activity is to divide the number in a manner similar to Sight & Sound concept 8.0.23. This process is more mathematically correct, and is the process from which the rule on moving the decimal point was derived.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide a decimal number by a whole number.

Total Days Participation ____________ out of a possible ______________

Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ____
Signature Title

KEEP YOUR EYE ON THE DOT

EXAMINE THE FOLLOWING:

$2\overline{).8} = 2\overline{)8 \text{ tenths}} = 4$ tenths $= .4$

$3\overline{).15} = 3\overline{)15 \text{ hundredths}} = 5$ hundredths $= .05$

NOW LOOK AT IT THIS WAY:

$\begin{array}{r} .4 \\ 2\overline{).8} \end{array}$ What can you say about the position of the decimal point?

$\begin{array}{r} .05 \\ 3\overline{).15} \end{array}$ What can you say about the numbers in the division problems, when you ignore the decimal points?

What is $2\overline{)8}$? ________

What is $3\overline{)15}$? ________

TRY THESE:

(1) $2\overline{).6}$

(2) $3\overline{).12}$

(3) $6\overline{).336}$

(4) $7\overline{)1.4}$

(5) $8\overline{).4}$ (Hint: 4 tenths = 40 hundredths)

(6) $4\overline{).02}$

(7) $12\overline{).24}$

(8) $15\overline{)1.35}$

(9) $25\overline{)122.5}$

(10) $11\overline{).0121}$

How do you locate the decimal point in the answer when the divisor is a whole number?

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ____________________ **District:** ____________________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ____ **Age** ____________
Last **First**
or
Grade ____________

Content Area General Math **Skills List No.** 39901, 39903, 39904, 39905, 40200
Sight & Sound No. 8.0.25

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a decimal number by a decimal number.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that finding a division answer is the same as finding a multiplier in a multiplication problem. Thus, 1.38 ÷ .6 = what is equal to .6 x what = 1.38. The teacher will also point out that basic multiplication does not involve decimal fractions. The .6 must be multiplied by some number to change it into a whole number. Ten is a convenient multiplier. Wherever the divider is multiplied by some number, the dividend must also be multiplied by that same number. That makes the problem into 13.8 ÷ 6. This process is discussed in Sight & Sound No. 8.0.25. The teacher can also point out that multiplying by 10 moves the decimal point one place to the right. For review of this see Sight & Sound No. 8.0.12. An activity that incorporates this is Lots of Dots (see attached sheets).

Criterion: What specific evidence will we accept to indicate that the objective was attained?

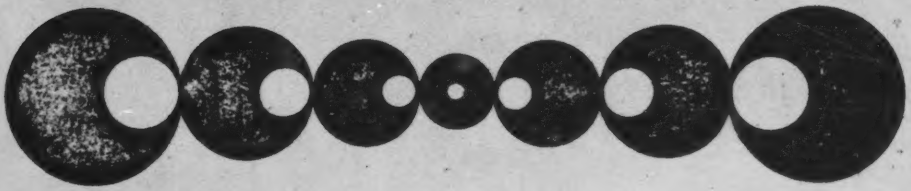
Given a teacher made test, the student will be able to divide a decimal number by a decimal number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

LOTS OF DOTS



Is $6\overline{)12}$ equivalent to $60\overline{)120}$?

CIRCLE OTHER PROBLEMS THAT ARE EQUIVALENT TO $6\overline{)12}$.

(A) $600\overline{)1200}$ (B) $6000\overline{)12000}$ (C) $.6\overline{)1.2}$

(D) $.06\overline{).12}$ (E) $.006\overline{).012}$ (F) $.0006\overline{).0012}$

Did you circle every problem? Can you make more problems of your own that are equivalent to $6\overline{)12}$?

WRITE 3 PROBLEMS WHICH ARE EQUIVALENT TO EACH OF THESE:

(1) $3\overline{)15}$ ______________, ______________, ______________

(2) $5\overline{)110}$ ______________, ______________, ______________

(3) $.6\overline{)1.2}$ ______________, ______________, ______________

(4) $.04\overline{).24}$ ______________, ______________, ______________

CHANGE EACH OF THE FOLLOWING PROBLEMS TO AN EQUIVALENT PROBLEM WITH A WHOLE NUMBER DIVISOR, THEN DIVIDE.

(5) $.7\overline{).14} = 7\overline{)1.4} = .2$

(6) $.03\overline{).156} =$ ______________ = __________

(7) $.11\overline{)1.21} =$ ______________ = __________

(8) $.08\overline{)7.2} =$ ______________ = __________

(9) $.2\overline{)4.4} =$ ______________ = __________

(10) $.006\overline{)12.6} =$ ______________ = __________

(11) $1.2\overline{)2.4} =$ ______________ = __________

(12) $1.5\overline{)30.3} =$ ______________ = __________

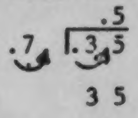
(13) $1.1\overline{).0132} =$ ______________ = __________

(14) $.012\overline{)36.48} =$ ______________ = __________

(15) $.09\overline{)1.8} =$ ______________ = __________

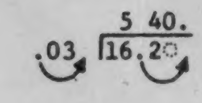
LOTS OF DOTS SHORTCUT

LOOK AT THESE:



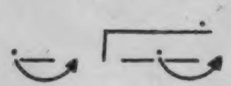
The decimal point moved ___ place(s) to the _____ in both the divisor and dividend. We now divide $7\overline{)3.5}$.

HERE IS ANOTHER EXAMPLE:



The decimal point moved ___ place(s) to the _____ in both the divisor and dividend. We now divide $3\overline{)1620}$.

THIS EXAMPLE HAS EVERYTHING BUT THE NUMBERS:



Was the decimal point in the answer placed correctly?

PLACE THE DECIMAL POINT IN THE ANSWER FOR EACH PROBLEM:

(1) .__ __ ⟌ . __ __ __

(2) .__ ⟌__ . __

(3) .__ __ ⟌. __ __ __

(4) . __ __ ⟌__ . __

(5) __ . __ ⟌__ __ .

(6) . __ __ __ ⟌__ . __ __ __

(7) . __ __ __ ⟌__ . __ __

(8) . __ __ __ ⟌__ . __

(9) . __ __ __ ⟌__

(10) __ . __ __ ⟌__ __ . __ __ __

(11) .__ __ ⟌__

(12) __ . __ __ ⟌. __

(13) __ __ . __ ⟌. __ __

(14) __ . __ ⟌__ __ .

(15) __ __. ⟌__

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________________ **Age** ______________
Last First or
Grade ______________

Content Area General Math **Skills List No.** 39901, 39903, 39904, 39905, 40200
Sight & Sound No. 8.0.26

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to divide a whole number by a decimal number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note that in order to do a problem like 20 ÷ .004 the 20 must be written as a decimal number; 20 is equal to 20.000. The problem then becomes 20.000 ÷ .004. The student will then proceed according to the procedure of Sight & Sound No. 8.0.25.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide a whole number by a decimal number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________ ______________________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ District: ______________________ Area ____________

For Dates ______________ to ________________

Student Name ____ Age ___________
Last First or
Grade __________

Content Area General Math Skills List No. 42900
Sight & Sound No. 8.0.27

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change ratios to hundreths, and then to percents.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that to change a ratio or fraction to a percent, an easy way to proceed is to first change the fraction to one with a denominator of 100. Thus, to change 3/4 to a percent, first make 3/4 into an equivalent fraction with a denominator of 100. The problem becomes $\frac{3}{4} = \frac{P}{100}$. To solve, you must find a number that will multiply times 4 to equal 100. Since 4 x 25 = 100, 25 must also be multiplied times the 3, giving a result of 75. If you need review, see Sight & Sound# 8.1.16. Thus, 3/4 = 75/100. The teacher can then point out that percents can be defined as per hundred or part of a hundred. Therefore, to change a fraction like 75/100 to a percent, note that it means 75 parts out of a hundred, or 75%. To summarize - to change a fraction to a percent, first change it to a fraction with a denominator 100, and then numerator becomes the percent.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a ratio into a fraction with a denominator of 100, and then to a percent.

Total Days Participation ______________ out of a possible ____________________

Criterion Attained: Yes ____________ No ______________ Date ________________

Teacher: ____
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** __________
Last First **or**
Grade __________

Content Area General Math **Skills List No.** 42300
Sight & Sound 8.0.28

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to change a decimal number to a percent.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will review the names and values of a decimal number. She will then point out that to change a decimal to a percent, the decimal must first be rewritten as an equivalent fraction. This fraction, if it does not now have a denominator of 100, must be rewritten with a denominator of 100. The numerator is now the percent. For example: $.38 = \frac{38}{100} = 38\%$; $.57 = \frac{57}{100} = 57\%$; $.6 = \frac{6}{10} = \frac{60}{100} = 60\%$; $.03 = \frac{03}{100} = 03\%$; $.125 = \frac{125}{1000} = \frac{12.5}{100} = 12.5\%$.

After several of these have been done in their entirety, the teacher can help discover through reviewing that the process can be shortened by moving the decimal point two places to the right and adding the percent sign.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to change a decimal number to a percent.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ________

For Dates __________ **to** __________

Student Name ______________________ (**Last** / **First**) **Age or Grade** ________

Content Area General Math **Skills List No.** 42900, 42303
Sight & Sound 8.0.29.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change a fraction to a percent.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that there are two ways to do this type of conversion, and as he becomes more familiar, both will have applications.

1) The first method is to use the definition of percent, and change the fraction to one whose denominator is 100. For example to find $\frac{3}{4}$, first solve the fraction, $\frac{3}{4} = \frac{P}{100}$. Recall, that you are looking for the number the denominator, 4, was multiplied to give the new denominator 100. Since this is 25, the new numerator will be 25 times the first numerator 3. Since this is 75 the result is $\frac{75}{100}$. This means that $\frac{3}{4} = 75\%$.

2) For the second method, the teacher will point out that a fraction is another way to write a division problem. Thus $\frac{3}{4}$ means $3 \div 4$. Doing the division gives an answer of .75 . The method of solving using decimal movement gives an answer of 75%.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a fraction to a percent.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes ________ **No** ________ **Date** ________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math **Skills List No.** 42900, 42303
Sight & Sound 8.0.29.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change a mixed number into a percent.

Activities: What will be done, when, how much (time), by whom?

The teacher will first review with the student the idea of changing a mixed number to an improper fraction. To change a mixed number like $1\frac{1}{8}$, first remember what is equivalent to $1\frac{1}{8} = 1 + \frac{1}{8}$. To add these numbers, the whole number must be rewritten so that it is a fraction with the same base as the fraction, in this case 8. Thus $1 = \frac{8}{8}$ The problem becomes $\frac{8}{8} + \frac{1}{8} = \frac{9}{8}$. Now this fraction can be rewritten so that its decimal equivalent can be derived. This will be done by dividing 9 by 8. Doing the division gives 1.125. Now the decimal point is moved two places to the right and the percent sign is added. Thus $1\frac{1}{8} = \frac{9}{8} = 1.125 = 112.5\%$. If the student is not comfortable with this technique, the teacher can point out to the student that she can rewrite the improper fraction, $\frac{9}{8}$, into one that has a denominator of 100, $\frac{112.5}{100}$. The numerator becomes the percent.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a mixed number into a percent.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math **Skills List No.** 42600, 43200
Sight & Sound 8.0.30.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to write a percent as a decimal number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will refer to the definition of percent, which means per hundred. To change a percent to a decimal, she will first change it to a fraction with a denominator of 100, and then change the fraction to its decimal equivalent. $99\% = \frac{99}{100} = .99$; $2\% = \frac{2}{100} = .02$; $127\% = \frac{127}{100} = 1.27$. After several of these have been done in their entirety, the teacher can help the student discover through reviewing that the process can be shortened by moving the decimal point two places to the left and dropping the precent sign.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to write a percent as a decimal number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age** ____________
Last First **or**
Grade ____________

Content Area General Math **Skills List No.** 42600, 43200
Sight & Sound 8.0.30.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to write a percent as a fraction.

Activities: What will be done, when, how much (time), by whom?

The teacher will review the definition of percent, which is per hundred. This means that 37% is another way to write the fraction 37/100. Any percent may be written as a fraction whose denominator is 100 and numerator is the percent written without the precent sign. The student then needs to look at the fraction to see if it can be written in lower terms. For example 40% = 40/100. Both 40 and 100 can be divided by 20, so 40% = 40/100 = 2/5. The teacher should note that fractions are always written in lowest terms, unless specifically requested to be left in a different form.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to write a percent as a fraction in lowest terms.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: Yes ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area General Math **Skills List No.** 43500
Sight & Sound 8.0.31.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find a certain percentage of a number using the proportion method.

Activities: What will be done, when, how much (time), by whom?

A grid percent caluculator is a good exercise to help develop the concept of percents and is a useful tool to help determine if a calculated answer could be correct. (See attached sheets.) The teacher will also point out that to solve a problem like 20% of 60 = what, a proportion is useful. This problem transforms into the proportion 20/100 = N/60. The 20/100 is the precent written as a fraction. The other fraction consists of the missing number in the numerator, N, over the number on the same side of the equal sign, 60, as the percent. The ratio then needs to be solved. Reviewing this procedure finds the numerator of the first fraction, 20, x the denominator of the second fraction, 60, equals the numerator of the second fraction, N, x the denominator of the first fraction, 100. Thus 20 x 60 = 100 · N, or 1200 = 100 · N. This means N = 12.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

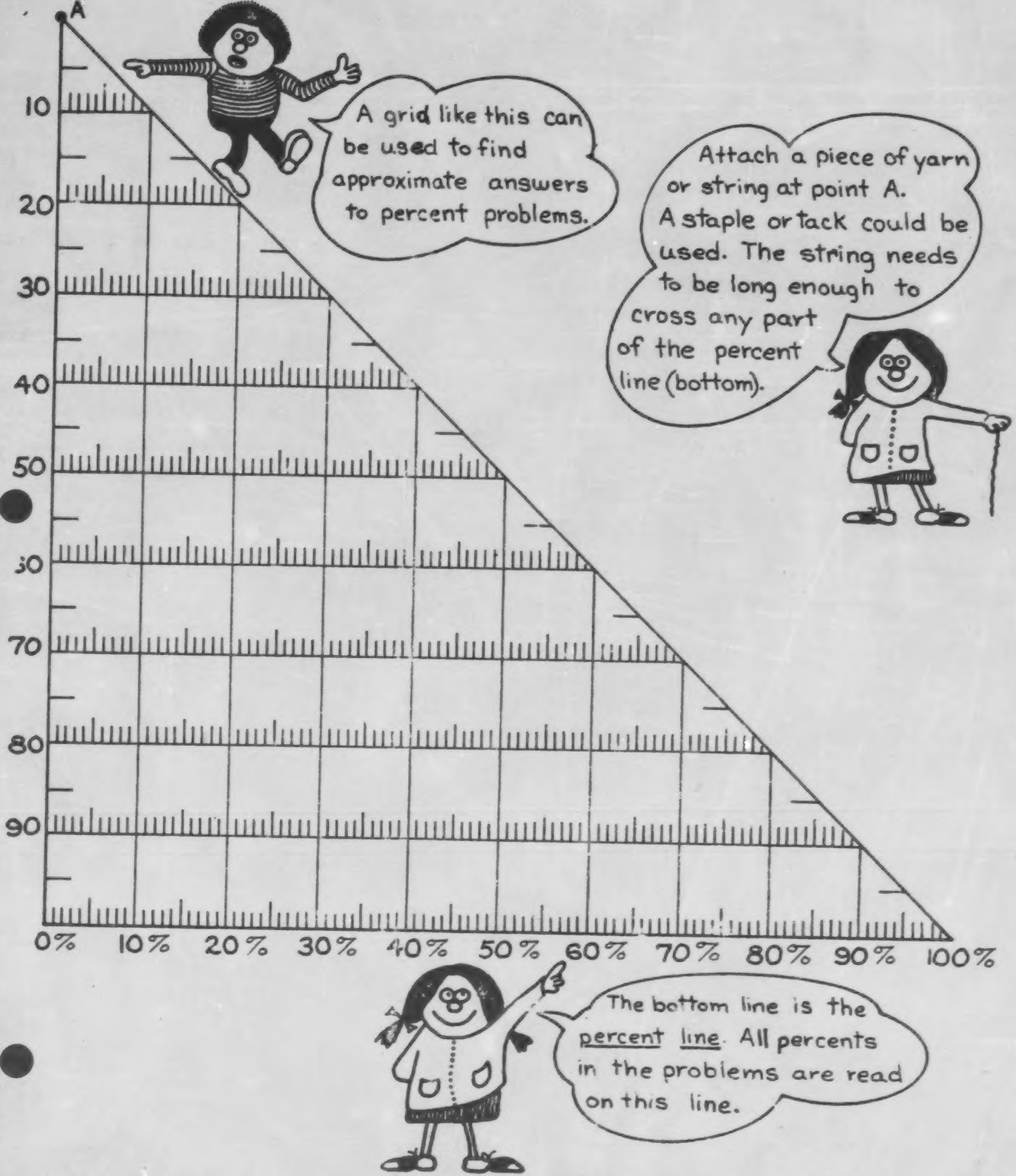
Given a teacher made test, the student will be able to find a certain percentage of a number using the proportion method.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature Title

GRID PERCENT CALCULATOR I


A
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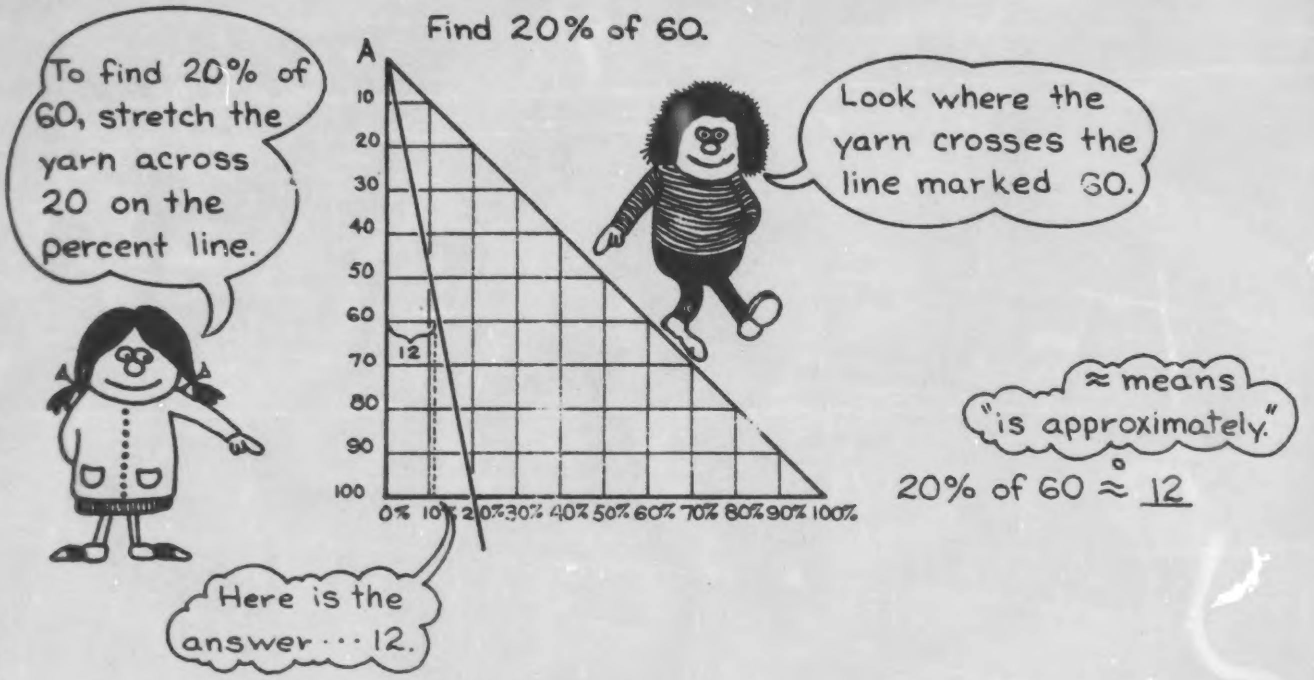
50
60
70
80
90
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
A grid like this can be used to find approximate answers to percent problems.
Attach a piece of yarn or string at point A. A staple or tack could be used. The string needs to be long enough to cross any part of the percent line (bottom).
The bottom line is the percent line. All percents in the problems are read on this line.

GRID PERCENT CALCULATOR II

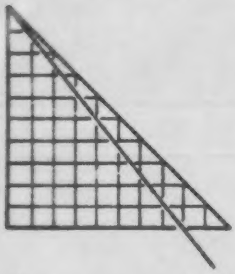

Find 20% of 60.
To find 20% of 60, stretch the yarn across 20 on the percent line.
Look where the yarn crosses the line marked 60.
A
10
20
30
40
50
60
70
80
90
100
12
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
≈ means "is approximately."
Here is the answer · · · 12.

20% of 60 ≈ 12

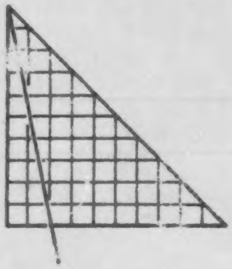
From the example above you can also find
a) 20% of 50 ≈ ___   b) 20% of 20 ≈ ___   c) 20% of 90 ≈ ___

Are each of the problems below set up correctly to find the answer?

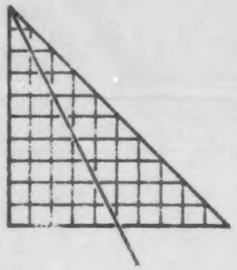
80% of 40 ____



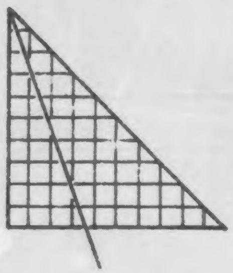
20% of 40 ____



70% of 20 ____



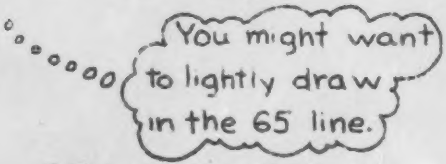
35 % of 50 ____



Use your grid percent calculator to approximate

a) 30% of 60 ≈ ___   c) 40% of 50 ≈ ___   e) 75% of 50 ≈ ___

b) 50% of 70 ≈ ___   d) 80% of 65 ≈ ___   f) 62% of 85 ≈ ___


You might want to lightly draw in the 65 line.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____ **Age** __________
Last First or
Grade __________

Content Area General Math **Skills List No.** 43500
Sight & Sound 8.0.31.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to find a certain percentage of a number using the decimal method.

Activities: **What will be done, when, how much (time), by whom?**

To solve a problem like 3% of 85 is what, the teacher should remind the student that 3% can be written as a decimal, .03, and that the word, of, often means multiply. Thus the problem 3% of 85 = what, becomes .03 x 85 = N. Doing the multiplication finds the value of N to be 2.55.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find a certain percentage of a number using the decimal method.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ **Age** ______________
Last First
or
Grade ______________

Content Area General Math **Skills List No.** 44100

Sight & Sound 8.0.32

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find what percent one number is of another.

Activities: What will be done, when, how much (time), by whom?

A grid calculator is a good exercise to help develop the concept of percents and is a useful tool to help determine if a calculated answer could be correct. (See attached sheets.) The teacher will also point out, that to solve a problem like what % of 40 = 15, a proportion is a good method to use to find the missing percent. The proportion becomes N/100 = 15/40. The percent, N/100 is one ratio, and 15, the number not on the same side of the equal sign as the percent, is the numerator of the second fraction. 40, the number on the same side of the problem as the percent, is the second denominator. By solving the proportion, the problem becomes 40 · N = 1500. Dividing by 40 to find N, gives it a value of 37 1/2. Thus the missing percent is 37 1/2%.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

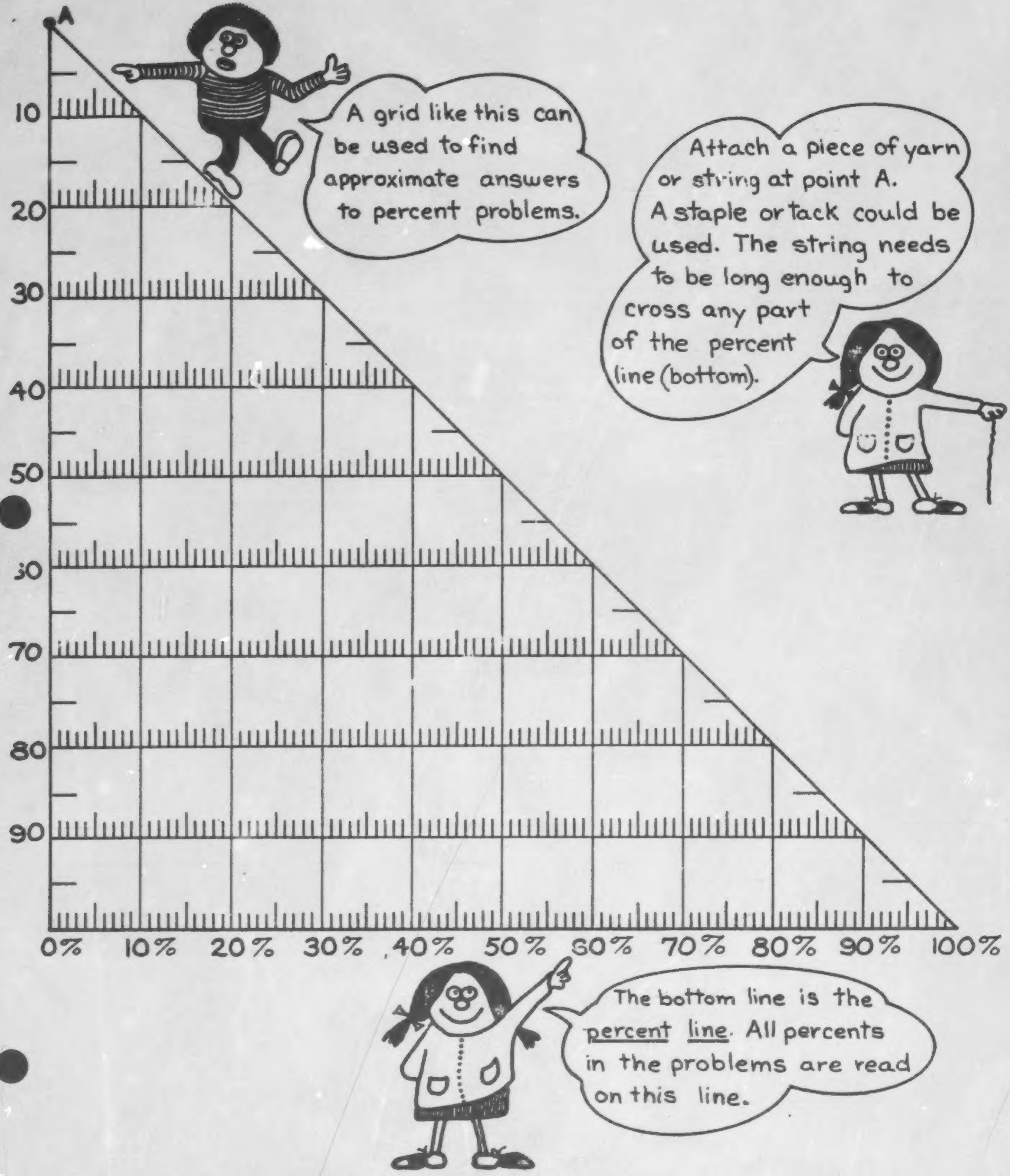
Given a teacher made test, the student will be able to find what percent one number is of another.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature Title

GRID PERCENT CALCULATOR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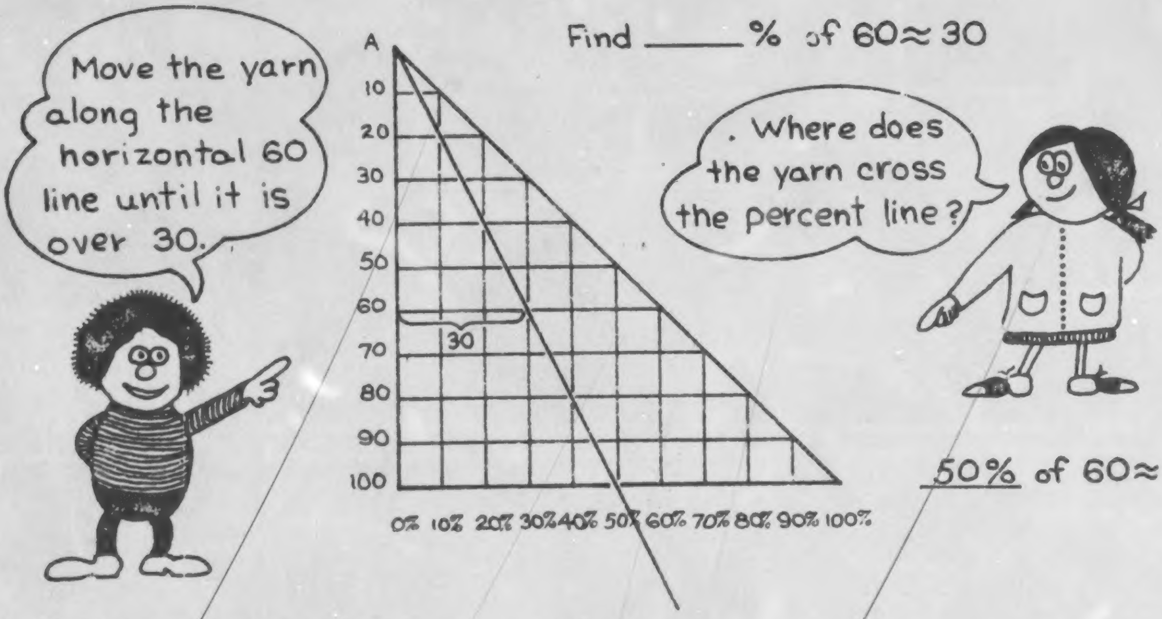
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
A grid like this can be used to find approximate answers to percent problems.
Attach a piece of yarn or string at point A. A staple or tack could be used. The string needs to be long enough to cross any part of the percent line (bottom).
The bottom line is the percent line. All percents in the problems are read on this line.

GRID PERCENT CALCULATOR

Find _____% of 60 ≈ 30


Move the yarn along the horizontal 60 line until it is over 30.
A
10
20
30
40
50
60
70
80
90
100
30
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
. Where does the yarn cross the percent line?

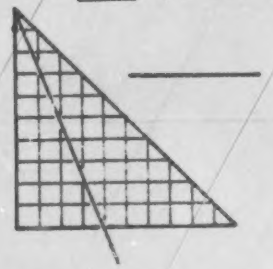
50% of 60 ≈ 30

From the example above you can also find

a) ___% of 40 ≈ 20 b) ___% of 90 ≈ 45 c) ___% of 65 ≈ 32

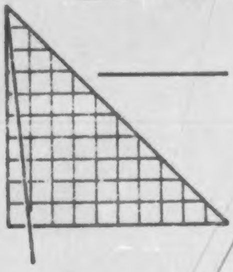
Are each of the problems below set up correctly to find the answer?

___% of 50 ≈ 20



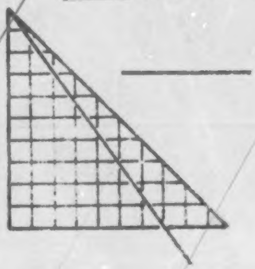
____

___% of 20 ≈ 10



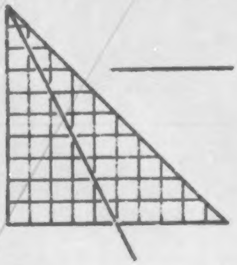
____

___% of 80 ≈ 60



____

___% of 90 ≈ 45



____

Use your grid percent calculator to approximate

a) ___% of 80 ≈ 20

b) ___% of 90 ≈ 30

c) ___% of 50 ≈ 15

d) ___% of 100 ≈ 10

e) ___% of 75 ≈ 25

f) ___% of 35 ≈ 24

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ to ______

Student Name ______ (Last) (First) **Age** ______ or **Grade** ______

Content Area General Math **Skills List No.** 43800
Sight & Sound 8.0.33.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find a number when a percent of it is known, using the proportion method.

Activities: What will be done, when, how much (time), by whom?

A grid calculator is a good exercise to help develop the concept of percents and is a useful tool to help determine if a calculated answer could be correct. (See attached sheets.) The teacher will point out, that to solve a problem like 35% of what = 56, a proportion is a good method to use to solve for the missing number. The proportion becomes 35/100 = 56/N. The first fraction, 35/100 is the percent written as a fraction. The second numerator, 56, is the number on the opposite side of the equal sign from the percent, and the missing number, N, which is on the same side of the equal sign as the percent, is the second fraction's denominator. Solving the proportion makes $35 \cdot N = 5600$. Dividing by 35 to find the missing number finds that N = 160. Thus 35% of 160 = 56.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

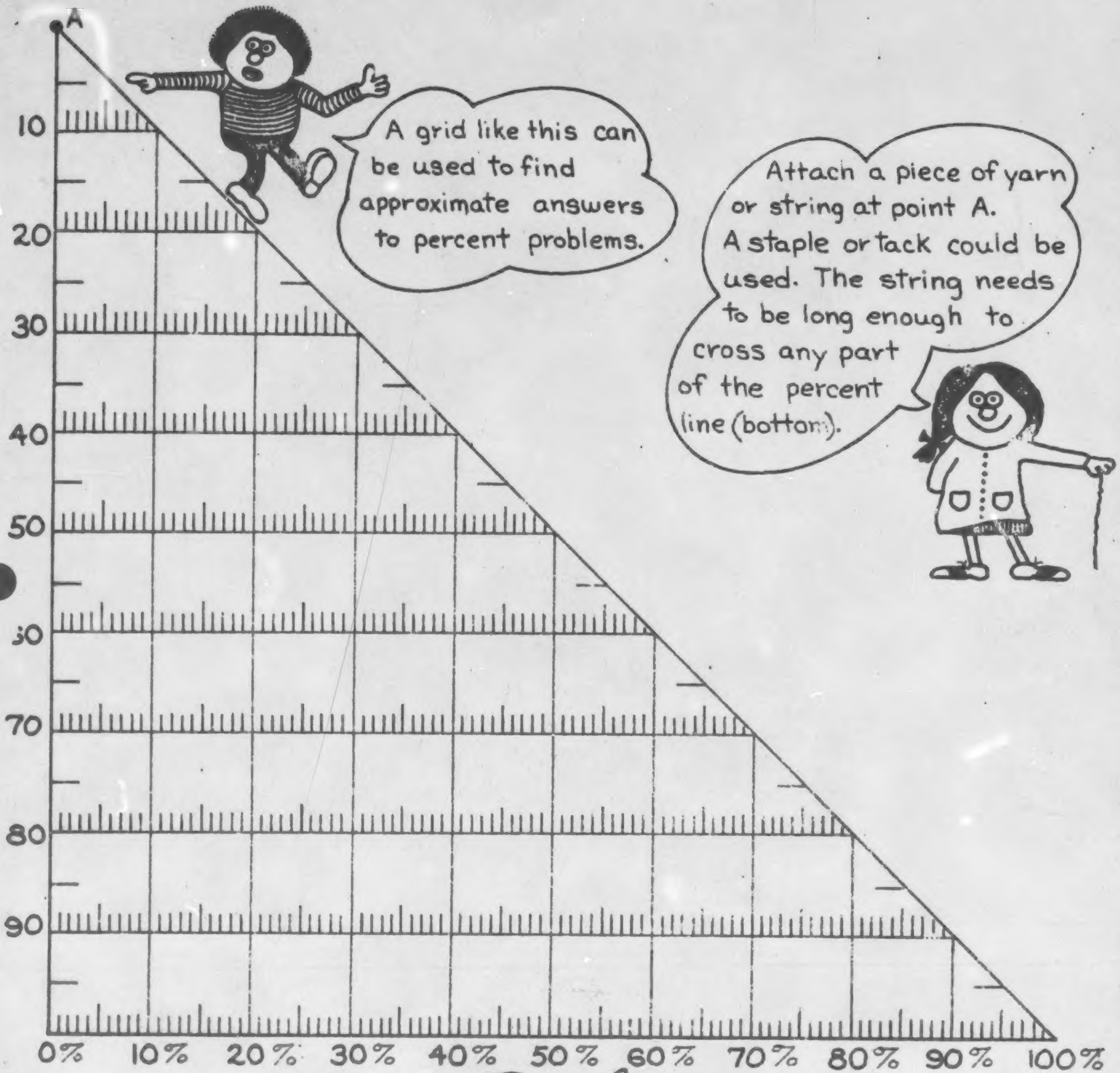
Given a teacher made test the student will be able to find a number when a percent of it is known, using the proportion method.

Total Days Participation ______ out of a possible ______

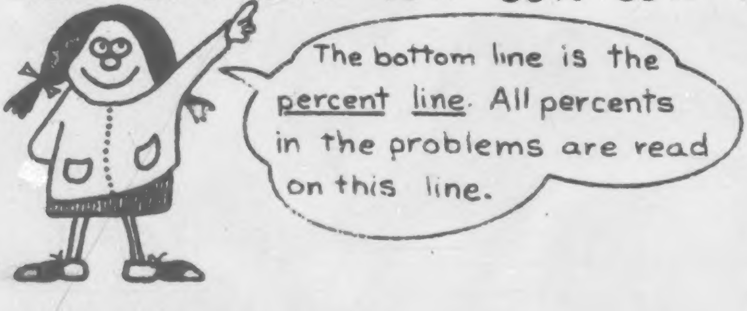
Criterion Attained: Yes ______ **No** ______ **Date** ______

Teacher: ______ (Signature) ______ (Title)

GRID PERCENT CALCULATOR



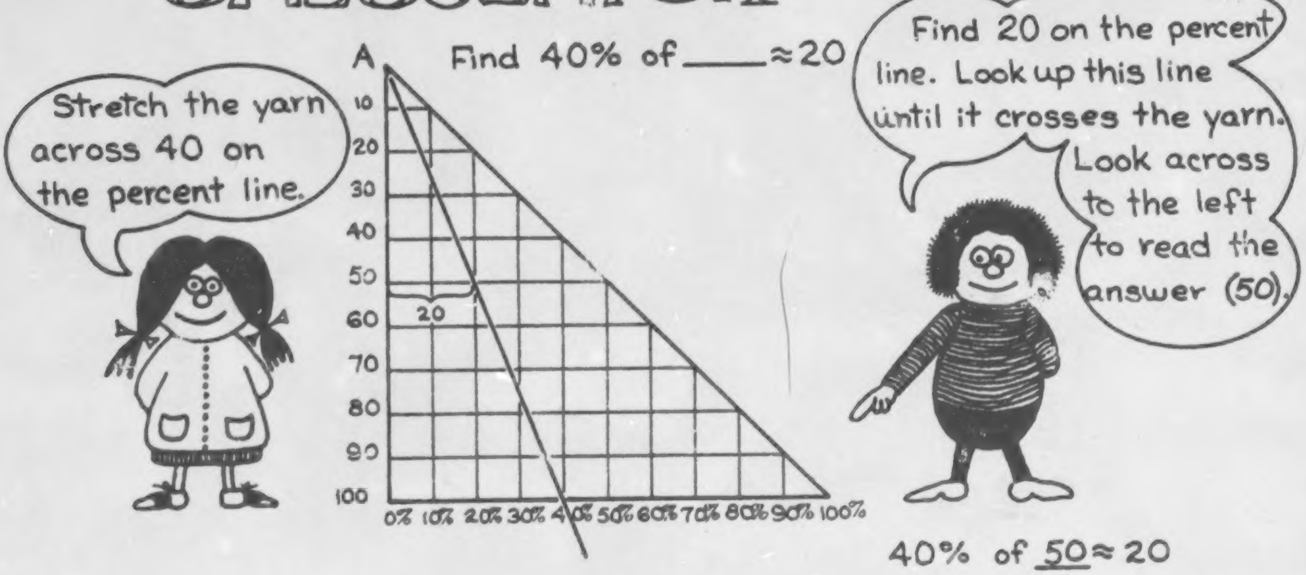
A
10
20
30
40
50
60
70
80
90
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
A grid like this can be used to find approximate answers to percent problems.
Attach a piece of yarn or string at point A. A staple or tack could be used. The string needs to be long enough to cross any part of the percent line (bottom).



The bottom line is the percent line. All percents in the problems are read on this line.

GRID PERCENT CALCULATOR

Find 40% of ___ ≈ 20

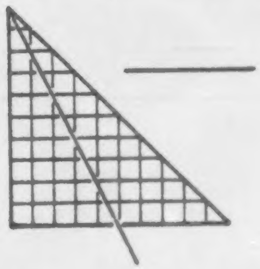

Stretch the yarn across 40 on the percent line.
A
10
20
30
40
50
60
70
80
90
100
20
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Find 20 on the percent line. Look up this line until it crosses the yarn. Look across to the left to read the answer (50).

40% of 50 ≈ 20

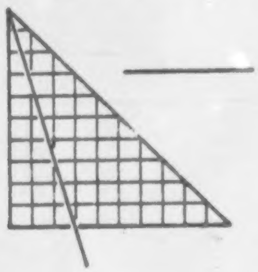
From the example above you can also find
a) 40% of ___ ≈ 28　　b) 40% of ___ ≈ 12　　c) 40% of ___ ≈ 40

Are each of the problems below set up correctly to find the answer?

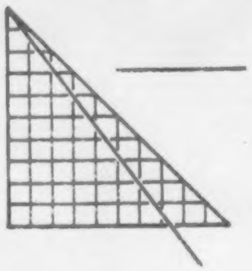
50% of ___ ≈ 40



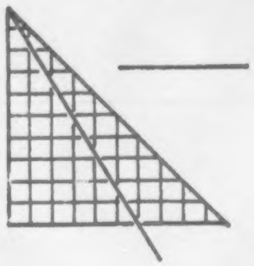
30% of ___ ≈ 15



75% of ___ ≈ 60



60% of ___ ≈ 15



Use your grid percent calculator to approximate

a) 50% of ___ ≈ 30　　c) 75% of ___ ≈ 30　　e) 48% of ___ ≈ 27

b) 20% of ___ ≈ 10　　d) 80% of ___ ≈ 55　　f) 85% of ___ ≈ 63

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ (**Last**) ______________ (**First**) **Age or Grade** ______________

Content Area General Math **Skills List No.** 43800
Sight & Sound 8.0.33.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find a number when a percent of it is known, using the decimal method.

Activities: What will be done, when, how much (time), by whom?

To solve a problem like 6% of what = 18, the teacher should remind the student that 6% can be written as a decimal, .06, and that the word, of, often means multiply. Thus the problem, 6% of what = 18 becomes .06 x N = 18. Dividing by .06 to find the missing number, N, gives a value of 300. Thus .06 x 300 = 18.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find a number when a percent of it is known, using the decimal method.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ (**Signature**) ______________ (**Title**)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ Last First **Age** ______ **or Grade** ______

Content Area General Math **Skills List No.** 24300, 24600, 24900, 25800
Sight & Sound No. 8.1.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will know the basic definitions related to fractions.

Activities: **What will be done, when, how much (time), by whom?**

The Number Pair sheet (see attached) is an excellent way to start a discussion on fractions. Several other examples in the classroom can be brought up, such as the number of boys over number of students, number of teacher desks over the total number of desks, number of red pens in the classroom over the number of total pens. The Whole Thing activity (see attached) and the Tangram Activity Board are excellent activities to cover the idea of parts of a whole unit. The teacher needs to enforce the ideas of numerator, denominator, and dividing line.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to give the basic definition related to fractions.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ________ **No** ________ **Date** ________

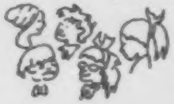
Teacher: ____________
Signature Title

Number Pairs
and Fractions

Fill in the Blanks:

$\boxed{1}$ of the children wear glasses.

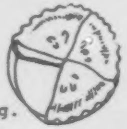
$\boxed{5}$ children in all.



$\frac{\boxed{1}}{\boxed{5}}$ of the children wear glasses.

1. ☐ piece of pie is missing

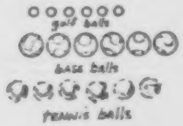
☐ pieces of pie at the beginning.



$\frac{\square}{\square}$ of the pie is missing.

☐ baseballs.

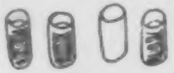
☐ balls in all.


golf balls
base balls
tennis balls

$\frac{\square}{\square}$ of the balls are baseballs.

3. ☐ glasses are full

☐ glasses in all.



$\frac{\square}{\square}$ of the glasses are full.

4. ☐ problems use addition.

☐ problems in all.

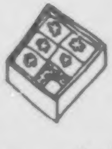
$\begin{array}{r}4\\+3\\\hline\end{array}$ $\begin{array}{r}12\\-5\\\hline\end{array}$ $\begin{array}{r}8\\+7\\\hline\end{array}$

$\begin{array}{r}15\\-6\\\hline\end{array}$ $\begin{array}{r}14\\-8\\\hline\end{array}$

$\frac{\square}{\square}$ of the problems are addition.

5. ☐ pieces of cake left in the pan.

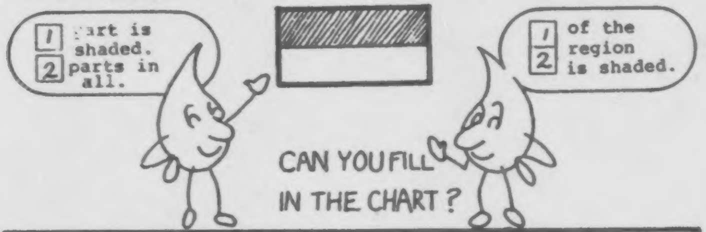
☐ pieces of cake in the pan at the beginning.



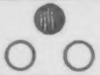
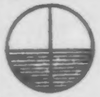
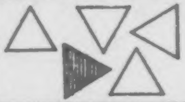
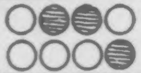
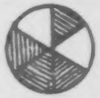
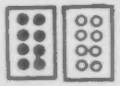
$\frac{\square}{\square}$ of the cake is left in the pan.

Best Copy Available

More Number Pairs


$\boxed{1}$ part is shaded.
$\boxed{2}$ parts in all.
$\frac{\boxed{1}}{\boxed{2}}$ of the region is shaded.

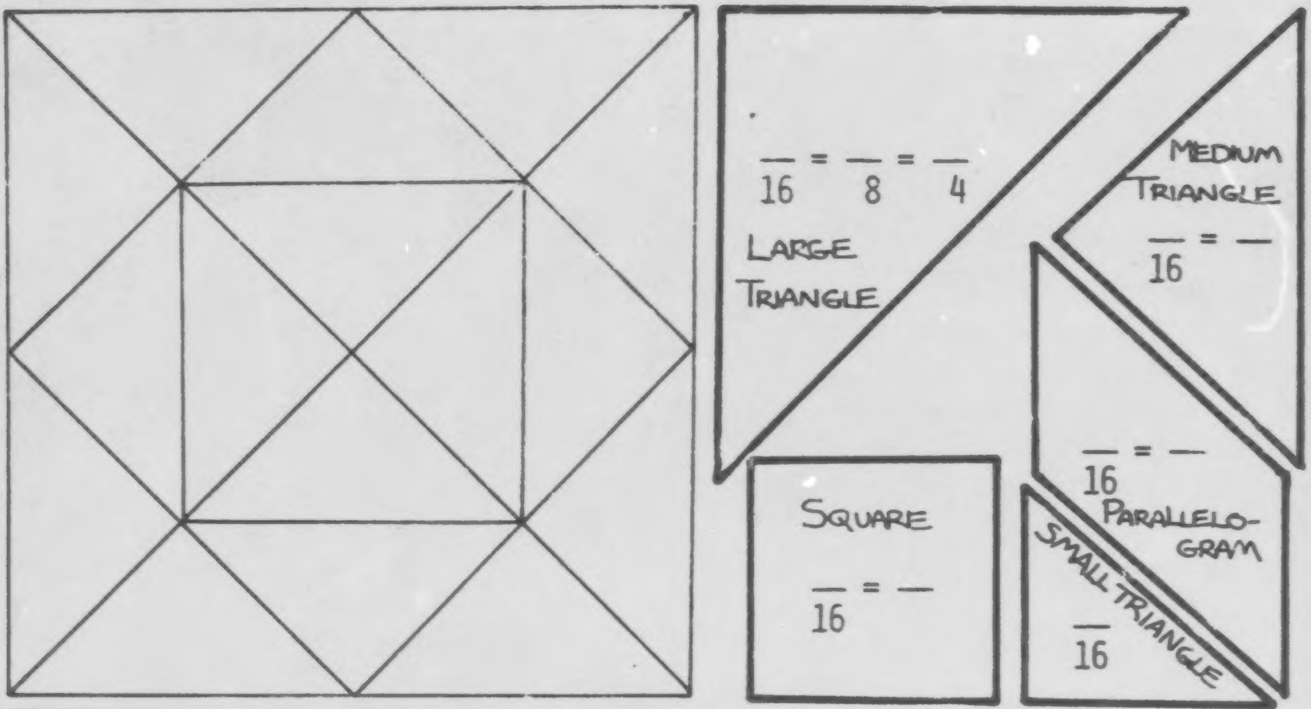
CAN YOU FILL IN THE CHART?

FIGURE	PART(S) SHADED	PARTS IN ALL	FRACTION SHADED
			
			
			
			
			
			

USE THE GRID BELOW TO HELP YOU NAME EACH TANGRAM PIECE. TG-I-1

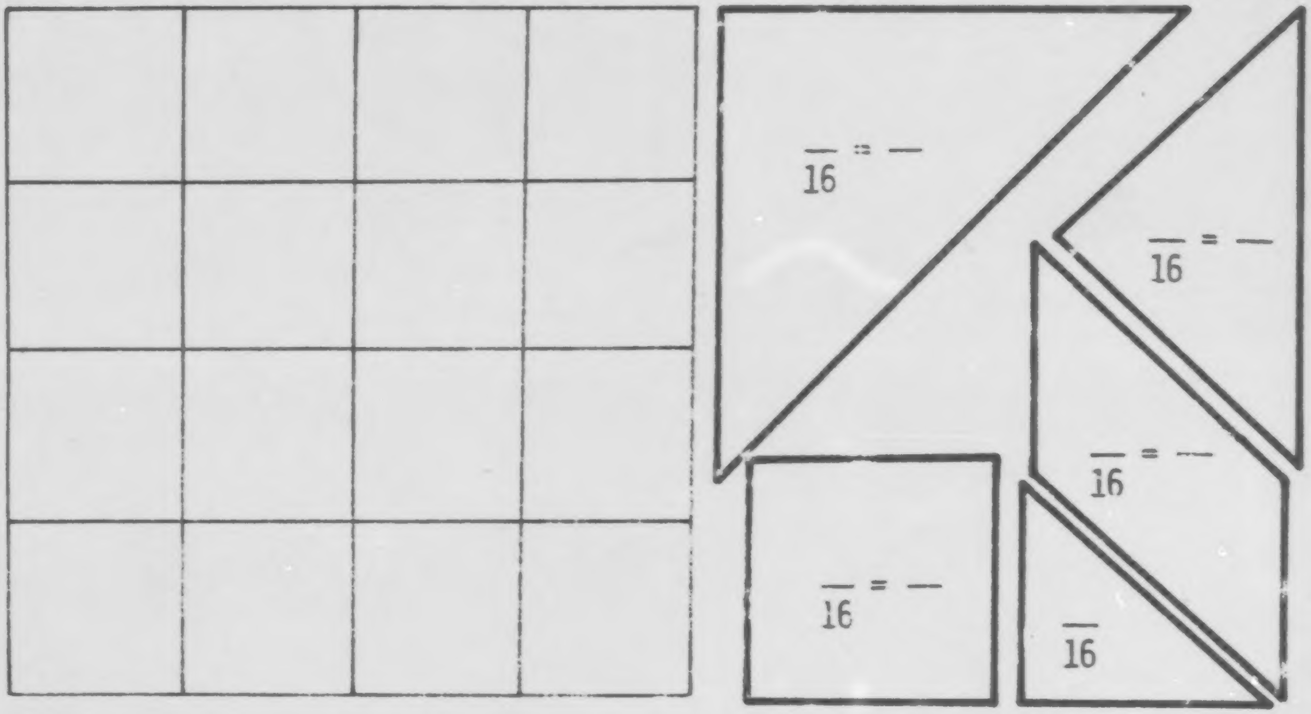
TANGRAM BOARD

1 =

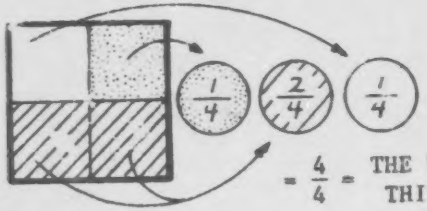

__/16 = __/8 = __/4
LARGE TRIANGLE
MEDIUM TRIANGLE
__/16 = __
__/16 = __
PARALLELOGRAM
SQUARE
__/16 = __
SMALL TRIANGLE
__/16

USE THE GRID BELOW TO HELP YOU NAME EACH TANGRAM PIECE. TG-I-2

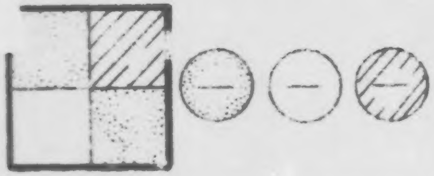
1 =


__/16 = __
__/16 = __
__/16 = __
__/16 = __
__/16

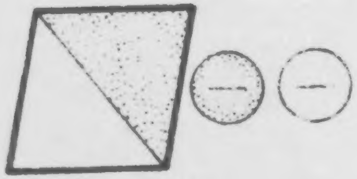
THE WHOLE THING



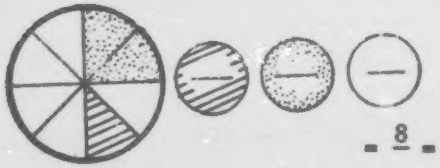
= $\frac{4}{4}$ = THE WHOLE THING!



= 1 WHOLE

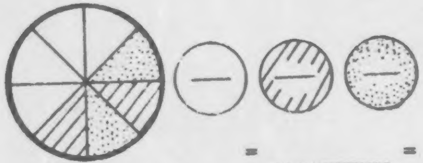


= ______ = 1

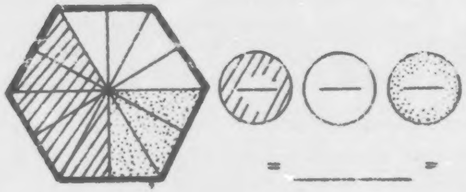


= $\frac{8}{\quad}$ = 1

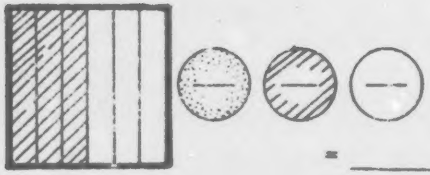
THE WHOLE THING?



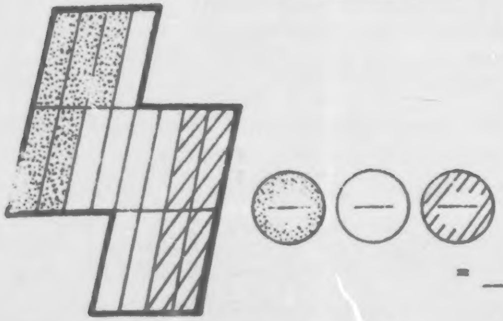
= ______ =



= ______ =



= ______ =



= ______ =

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____________________ ____________________ ____________________ **Age** __________
Last First
or
Grade __________

Content Area General Math **Skills List No.** 25500, 26400
Sight & Sound No. 8.1.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will know the basic concepts of equivalent fractions.

Activities: What will be done, when, how much (time), by whom?

1) Fraction Apple-cation is an excellent demonstration by the teacher to begin the concept of equivalent fractions (see attached sheet). After the demonstration, the activity Fair Exchange (see attached sheet) does a good job on reinforcing the concept.

2) Another activity involves the use of Fraction Bars (see attached sheet). This also reinforces the demonstration. The Fraction Bar Sheet is a good summarization of the fractions from denominator 1 to 16, for 10 of the more common fractions (see attached sheet).

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to give the basic concepts of equivalent fractions.

Total Days Participation ______________ **out of a possible** __________________

Criterion Attained: Yes ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature Title

FRACTION APPLE-CATION

It is not always possible or practical for students to do experiments by themselves. A well-prepared teacher demonstration can fill this void. The materials needed for this demonstration are 1/2 dozen large apples, a sharp knife, a cutting board, some waxed paper, and a fraction worksheet for the students if you choose.

Students should gather around the demonstration table so they can see the parts as they are cut.

HEY!
BE CAREFUL!

A) Cut an apple into two parts.
   1) Each part is 1/2 of the whole.
   2) Put the two halves together to show 2/2 = 1.

B) Cut one of the halves into fourths.
   1) Show 2/4 = 1/2 by comparing with the uncut half.
   2) Cut the other half into fourths.
   3) Put the fourths together to show 4/4 = 1.
   4) Take 1/4 out and show 1/4 and 3/4.

C) Cut one of the fourths into eighths.
   1) Show 2/8 = 1/4 by comparing with an uncut fourth.
   2) Cut another. Show 4/8 = 2/4 = 1/2.
   3) Cut another. Show 6/8 = 3/4. (Students will need to visualize 3/4 from the previous example, or a second apple can be cut to show 3/4.)
   4) Cut the last fourth. Put pieces together to show 8/8 = 1.

D) If the pieces are large enough, cut the eighths into sixteenths, and demonstrate the equivalent fractions.

BE SURE TO HAVE ENOUGH PIECES AND LET THE STUDENTS EAT THE APPLE FRACTIONS.

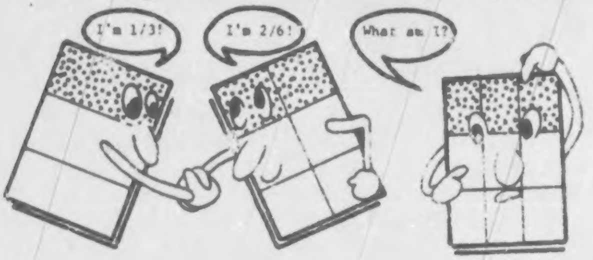
E) With another apple, cut out a 1/3 slice. (Tell the students that this cut is only a guess.)
   1) Show 1/3 and 2/3
   2) Cut the 2/3 to show 3/3 = 1.

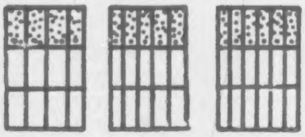
F) Cut one of the thirds to get sixths.
   1) Show 2/6 = 1/3 by comparing with an uncut third.
   2) Cut another third into sixths.
   3) Show 4/6 = 2/3 by visualizing 2/3 or by cutting another apple.
   4) Cut the last third and then show 6/6 = 1 by putting the pieces together.

G) If the pieces are large enough, cut the sixths into twelfths and demonstrate the equivalent fractions.

FAIR EXCHANGE

Find the equivalent fractions in each row and answer the questions.


I'm 1/3!
I'm 2/6!
What am I?

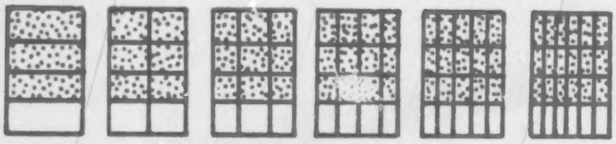


____ ____ ____

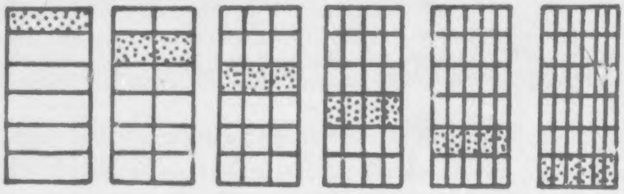
Name these.

Are the names equal to $\frac{1}{3}$?

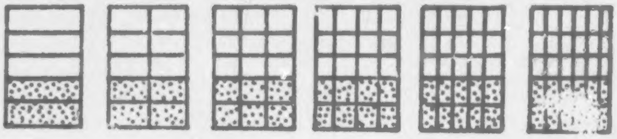
NAME THE FOLLOWING:



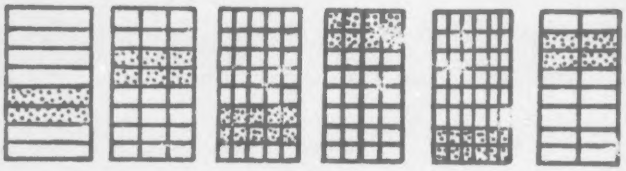
____ = ____ = ____ = ____ = ____ = ____



____ = ____ = ____ = ____ = ____ = ____



____ = ____ = ____ = ____ = ____ = ____



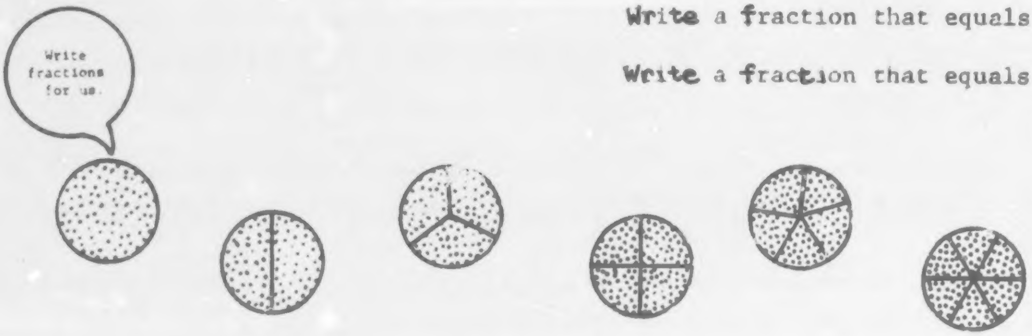
____ = ____ = ____ = ____ = ____ = ____

Does $\frac{1}{6} = \frac{3}{18}$? ____ Does $\frac{3}{18} = \frac{5}{30}$? ____ Does $\frac{1}{6} = \frac{5}{30}$? ____

Write a fraction that equals $\frac{12}{48}$. ____

Write a fraction that equals $\frac{6}{24}$. ____

Write a fraction that equals $\frac{2}{8}$. ____


Write fractions for us.

____ ____ ____ ____ ____ ____

Does $1 = \frac{8}{8}$? ____

Does $\frac{3}{3} = \frac{5}{5}$? ____

THE FRACTION BAR SHEET

1

$\frac{1}{2}$ $\frac{1}{2}$

$\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$

$\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$

$\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$

$\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$

$\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$ $\frac{1}{8}$

$\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$ $\frac{1}{10}$

$\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$ $\frac{1}{12}$

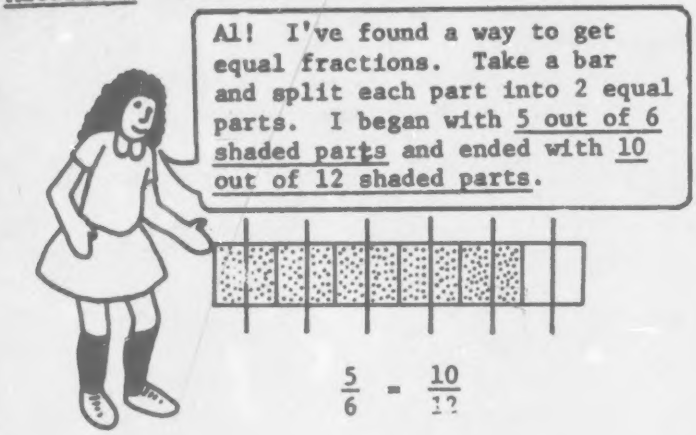
$\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$

FRACTION BARS

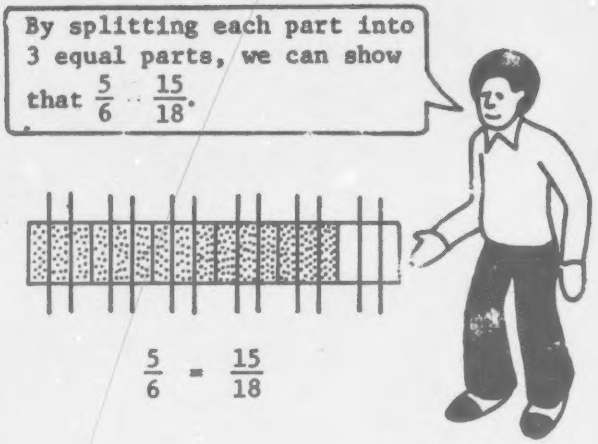
MAKING EQUAL FRACTIONS

FB-I-1

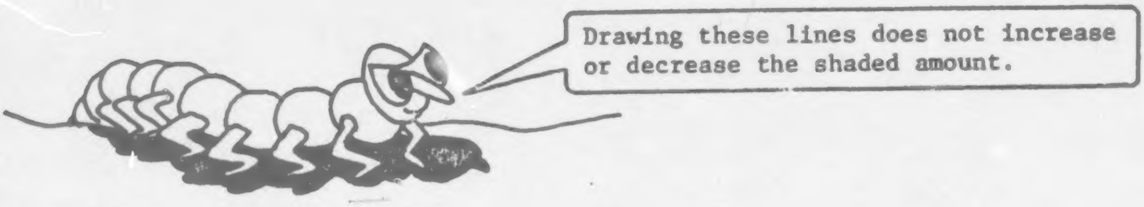
Materials Fraction bars


Al! I've found a way to get equal fractions. Take a bar and split each part into 2 equal parts. I began with 5 out of 6 shaded parts and ended with 10 out of 12 shaded parts.

$\frac{5}{6} = \frac{10}{12}$


By splitting each part into 3 equal parts, we can show that $\frac{5}{6} = \frac{15}{18}$.

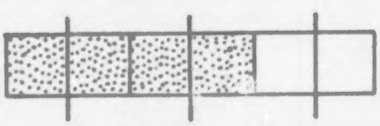
$\frac{5}{6} = \frac{15}{18}$


Drawing these lines does not increase or decrease the shaded amount.

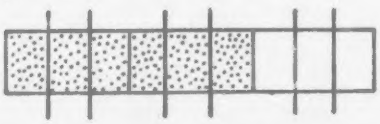
Activities (1 or 2 students)

1. Pick a fraction bar for the following activities.
   a. By drawing lines on the bar, split each part of the bar into 2 equal parts. Write the equation.
   b. Erase the marks on the bar, and this time split each part of the bar into 3 equal parts. Write the equation.
   c. Erase the marks on the bar. Now split each part of the bar into 4 equal parts. Write the equation.
2. Repeat these activities for a fraction bar of each color.

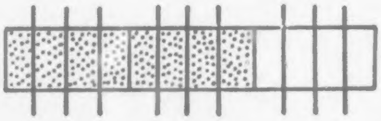
Examples



$\frac{2}{3} = \frac{4}{6}$



$\frac{2}{3} = \frac{6}{9}$



$\frac{2}{3} = \frac{8}{12}$

These examples show that $\frac{2}{3}$, $\frac{4}{6}$, $\frac{6}{9}$, and $\frac{8}{12}$ are fractions for the same amount.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____ **Age** __________
Last First **or**
Grade __________

Content Area General Math **Skills List No.** 27000
Sight & Sound No. 8.1.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify factors.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will describe factors are the multipliers that make up a number, or those numbers that will divide evenly into another number. The teacher will make the point that a set of factors includes every number that is a whole number factor. To avoid missing factors, he will strongly suggest that the student will always start with the number 1, and try all whole numbers until she is certain that all factors are obtained. For example:

24: 1 x 24
2 x 12
3 x 8
4 x 6
5 x (reject)
6 x 4 (a repeat)-- This assures that all factors are taken care of.

Thus, the factors of 24 =(1, 2, 3, 4, 6, 8, 12, 24).

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify all of the factors of a number.

Total Days Participation ______________ **out of a possible** ________________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ **Age** ______________
Last **First** **or Grade** ______________

Content Area General Math **Skills List No.** 09400, 26100, 27003
Sight & Sound 8.1.4

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify prime numbers.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will introduce the student to the definition of a prime number, a number that has exactly 2 factors. Those factors are the number itself, and the number 1. For example 7 is prime, because its only factors are itself, 7, and 1. The teacher may also wish to identify the other numbers as composite numbers. The teacher may also wish to identify and encourage the student to remember the first ten or so prime numbers, as a matter of expediency for future reference. The first ten are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 27.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify prime numbers.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ Last ____________ First ____________ **Age** ____________ or **Grade** ____________

Content Area General Math **Skills List No.** 26100
Sight & Sound 8.1.5

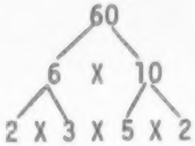
Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify the prime factors of any whole number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will point out that a special group of factors of any number will be useful to have for any composite numbers. The teacher will then show a techinque that will easily give a number's set of prime number factors. This techinque is called a factor tree. The tree starts with the original number, and its branches lead to factors. The final set of factors will all be prime. For example:

Neither 6 nor 10 are factored, so another set of factors is necessary



All numbers are prime, so the factoring is done.

The teacher can have the student start at a different point, 5 X 12 for example, and see that the final factorization will be the same.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the students will be able to identify the prime factors of any whole number.

Total Days Participation ____________ out of a possible ____________

Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ____________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ **to** ________________

Student Name ____ **Age** ____________
Last First
or
Grade __________

Content Area General Math **Skills List No.** 26100, 26400
Sight & Sound 8.1.6

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to simplify fractions by writing an equivalent statement in lowest terms.

Activities: **What will be done, when, how much (time), by whom?**

A good way to write equivalent fractions in lowest terms is to follow the Lowest Terms Flow Chart. The teacher will need to remind the student that to completely factor a number means to factor it as a product of prime numbers. Factor boards is another way of doing the same thing. Each factor board is the product of prime numbers for a number. The process of simplification follows the same line. Both of these are on the attached sheets.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

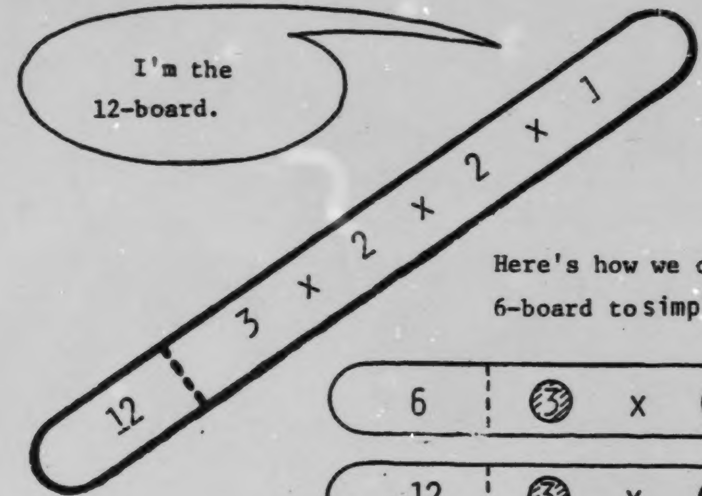
Given a teacher made test, the student will be able to simplify fractions.

Total Days Participation ______________ **out of a possible** ____________________

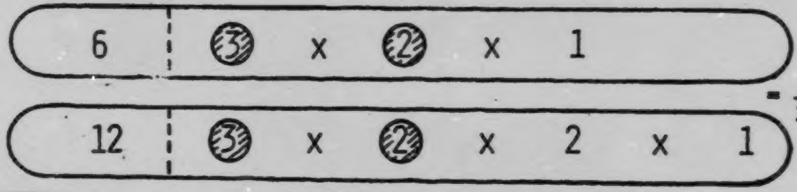
Criterion Attained: **Yes** ____________ **No** ______________ **Date** ________________

Teacher: ____
Signature Title

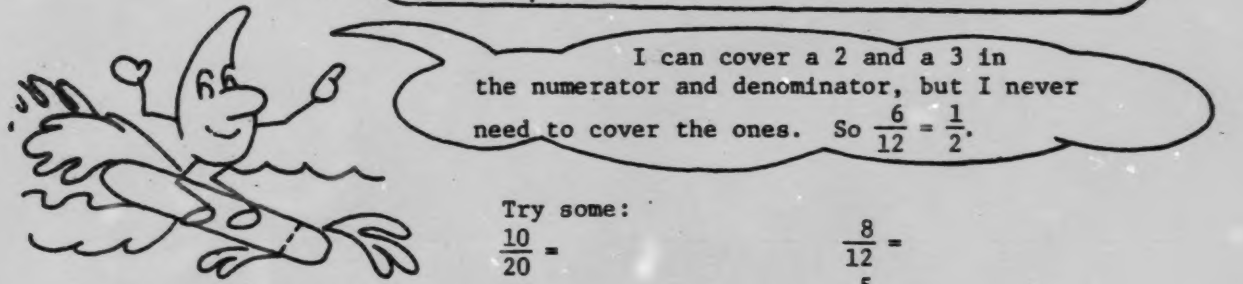
FACTOR BOARDS


I'm the 12-board.
12
3 x 2 x 2 x 1

Here's how we can use the 12-board and the 6-board to simplify the fraction $\frac{6}{12}$.


6 | ③ x ② x 1
12 | ③ x ② x 2 x 1

$= \frac{1}{2 \times 1} = \frac{1}{2}$


I can cover a 2 and a 3 in the numerator and denominator, but I never need to cover the ones. So $\frac{6}{12} = \frac{1}{2}$.

Try some:

$\frac{10}{20} =$

$\frac{6}{16} =$

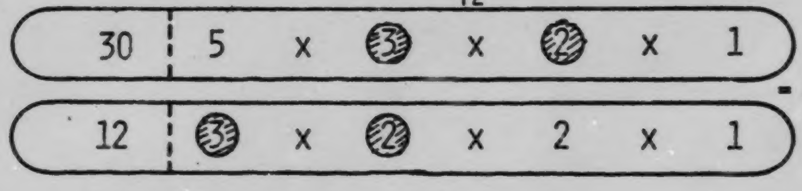
$\frac{6}{8} =$

$\frac{8}{12} =$

$\frac{5}{15} =$

$\frac{9}{12} =$

We can use the factor boards to simplify $\frac{30}{12}$ also.


30 | 5 x ③ x ② x 1
12 | ③ x ② x 2 x 1

$= \frac{5 \times 1}{2 \times 1} = \frac{5}{2}$

Try these:

$\frac{12}{9} =$

$\frac{6}{16} =$

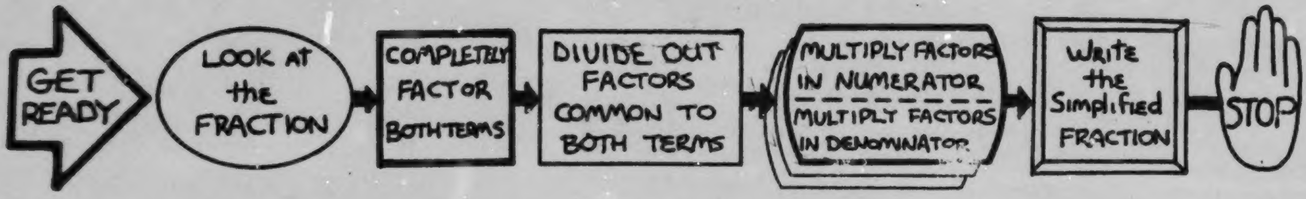
$\frac{20}{5} =$

$\frac{14}{10} =$

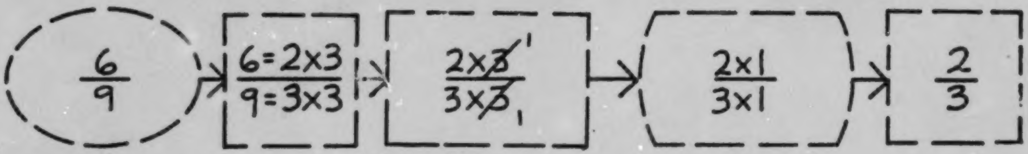
$\frac{4}{3} =$

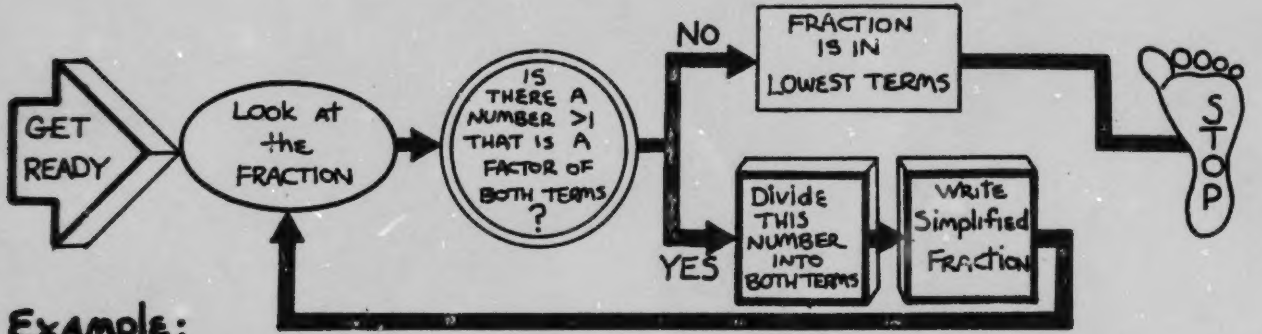
$\frac{16}{9} =$

LOWEST TERMS FLOW CHARTS

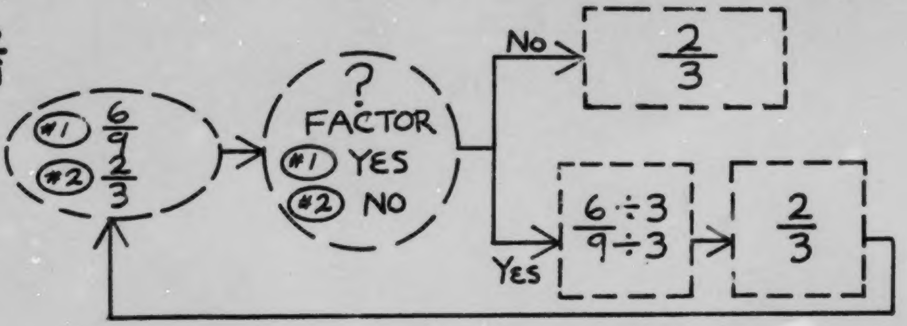

GET READY
LOOK AT the FRACTION
COMPLETELY FACTOR BOTH TERMS
DIVIDE OUT FACTORS COMMON TO BOTH TERMS
MULTIPLY FACTORS IN NUMERATOR
MULTIPLY FACTORS IN DENOMINATOR
Write the Simplified FRACTION
STOP

Example:
Reduce $\frac{6}{9}$


6/9
6=2x3
9=3x3
2x3/3x3
1
1
2x1/3x1
2/3


GET READY
Look at the FRACTION
IS THERE A NUMBER >1 THAT IS A FACTOR OF BOTH TERMS ?
NO
FRACTION IS IN LOWEST TERMS
STOP
YES
Divide THIS NUMBER INTO BOTH TERMS
Write Simplified Fraction

Example:
Reduce $\frac{6}{9}$


#1 6/9
#2 2/3
?
FACTOR
#1 YES
#2 NO
No
2/3
Yes
6÷3/9÷3
2/3

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age or Grade** ______________
Last **First**

Content Area General Math **Skills List No.** 26400, 29700, 30900
Sight & Sound 8.1.7.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply fractions.

Activities: What will be done, when, how much (time), by whom?

The teacher will demonstrate the basic steps in multiplication of Fractions. A problem like $\frac{3}{10} \times \frac{4}{9}$ becomes $\frac{3 \times 4}{10 \times 9}$ or $\frac{12}{90}$.

The basic rule is to multiply the numerators and the denominators, and place the numerator product over the denominator product. This gives the fraction $\frac{12}{90}$.

The teacher then needs to remind the student that the fraction must be rewritten in lowest terms. Factoring the numerator and denominator completely gives

$$\frac{2 \times 2 \times 3}{2 \times 3 \times 3 \times 5} \cdot \frac{\textcircled{2} \times 2 \times \textcircled{3}}{\textcircled{2} \times 3 \times \textcircled{3} \times 5}$$

Dividing out the common factor leaves a 2 in the numerator, and 3 x 5 in the denominator.

$$\frac{2}{3 \times 5} = \frac{2}{15}$$

Multiplying the denominator factors together gives the fraction $\frac{2}{15}$ as a fraction in lowest terms equivalent to $\frac{12}{90}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to multiply fractions together.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________ (Last) ______________________ (First) **Age** ______ **or Grade** ______

Content Area General Math **Skills List No.** 26400, 29700, 30900
Sight & Sound 8.1.7.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply a whole number times a fraction.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will remind the student that any whole number is equivalent to the fraction with that number in the numerator, and a 1 in the denominator, thus $3 = \frac{3}{1}$.

Keeping this fact in mind the teacher will proceed with a problem like $\frac{3}{20} \times 5$.

The whole number, 5, becomes $\frac{5}{1}$. Thus the problem becomes $\frac{3}{20} \times \frac{5}{1}$. Now multiply the two fractions, $\frac{3}{20} \times \frac{5}{1} = \frac{3 \times 5}{20 \times 1} = \frac{15}{20}$. This fraction can be simplified. $\frac{15}{20} = \frac{3 \times 5}{2 \times 2 \times 5}$. The fives can be divided out of the top and bottom leaving 3 in the numerator and 2 x 2 in the denominator. Multiplying the denominators gives $\frac{3}{4}$ as the result in lowest terms of the product.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply a whole number times a fraction.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** ________ **No** ________ **Date** ________

Teacher: ______________________ (Signature) ______________________ (Title)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age or Grade** ______________
Last **First**

Content Area General Math **Skills List No.** 27601 - 27603 & 27901, 27907
Sight & Sound 8.1.8

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add fractions with common denominators and without regrouping.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a couple of good activities to help the student with the concept of adding of fractions.

1) One of these, fraction bars can either be done on paper, or be actually made out of wood or tag board (see attached sheet).
2) The second activity involves an extention of the basic use of the number line (see attached sheet).

Notice that in both cases, the problem is written along with the activity, as the student becomes more aware of the situation, he will have less dependence on the picture. The teacher needs to point out through the activities that each of the fraction problems involves common fractions in the problem. In addition the teacher needs to point out that the numerator becomes the sum of the two numerators of the two fractions.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

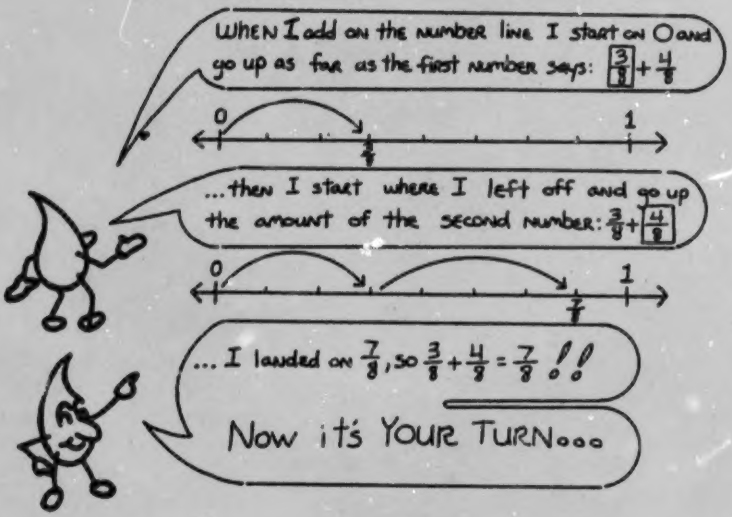
Given a teacher made test, the student will be able to add fractions with common denominators and without regrouping.

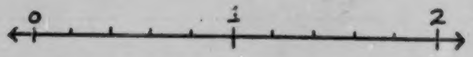
Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

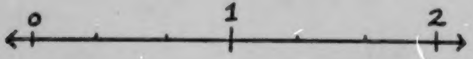
Teacher: ______________ ______________
Signature **Title**

ADDITION of FRACTIONS

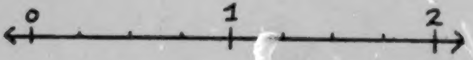

WhEN I add on the number line I start on 0 and go up as far as the first number says: $\boxed{\frac{3}{8}}+\frac{4}{8}$
0
1
$\frac{3}{8}$
...then I start where I left off and go up the amount of the second number: $\frac{3}{8}+\boxed{\frac{4}{8}}$
0
1
$\frac{7}{8}$
...I landed on $\frac{7}{8}$, so $\frac{3}{8}+\frac{4}{8}=\frac{7}{8}$!!
Now it's YOUR TURN...

1. 

$\frac{1}{5}+\frac{3}{5}=$ ___

2. 

$\frac{1}{5}+\frac{1}{3}=$___

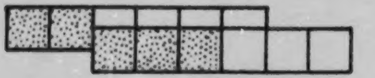
3. 

$\frac{2}{4}+\frac{1}{4}=$___

ACTIVITY CARDS - FRACTION BARS

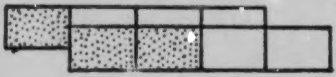
Write the missing fraction for each pair of bars, and then write the sum

①



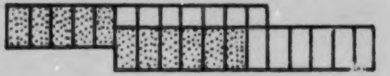
$\frac{2}{6} + \underline{\qquad} = \boxed{\quad}$

②



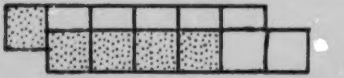
$\underline{\qquad} + \frac{2}{4} = \boxed{\quad}$

③



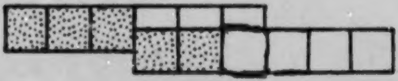
$\frac{5}{12} + \underline{\qquad} = \boxed{\quad}$

④



$\frac{1}{6} + \underline{\qquad} = \boxed{\quad}$

⑤



$\frac{3}{6} + \underline{\qquad} = \boxed{\quad}$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

hool: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ ____________ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** 27601-27603 & 27901 & 27902
Sight & Sound 8.1.8

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add fractions with common denominators and regrouping.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a good exercise to demonstrate the addition of fractions with common denominators. The first one can be done on paper, or on pieces of wood or tag board. (see attached sheet). This activitity starts with the basic addition without regrouping and carries it into larger sums.

The teacher needs to point out the regrouping technique as these examples are explored. For example, to add $\frac{2}{4} + \frac{3}{4}$ you first add the numerators $\frac{2 + 3}{4}$, which gives $\frac{5}{4}$. The teacher then needs to note to the student that this is an improper fraction. In order to find the mixed number equivalent to the fraction $\frac{5}{4}$, the fraction must be considered a division problem, $5 \div 4$. Doing the division and writing, the remainder as a fraction, gives an equivalent statement of $1\frac{1}{4}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to add fractions with common denominators and regrouping.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

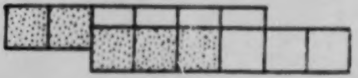
Teacher: ____________
Signature **Title**

ACTIVITY CARDS - FRACTION BARS

FB-II-1

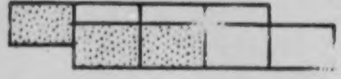
Write the missing fraction for each pair of bars, and then write the sum or difference of these fractions.

①



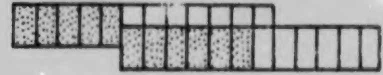
$\frac{2}{6} + \underline{\qquad} = \boxed{}$

②



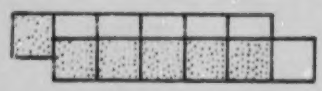
$\underline{\qquad} + \frac{2}{4} = \boxed{}$

③



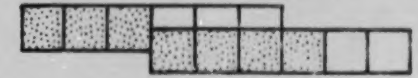
$\frac{5}{12} + \underline{\qquad} = \boxed{}$

④



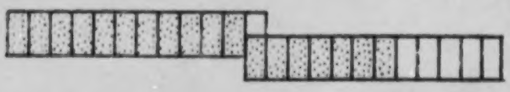
$\frac{1}{6} + \underline{\qquad} = \boxed{}$

⑤



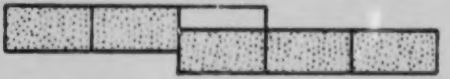
$\frac{3}{6} + \underline{\qquad} = \boxed{}$

⑥



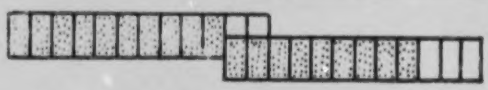
$\underline{\qquad} + \frac{7}{12} = \boxed{}$

⑦



$\frac{2}{3} + \underline{\qquad} = \boxed{}$

⑧



$\underline{\qquad} + \frac{9}{12} = \boxed{}$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ (Last) ______ (First) **Age or Grade** ______

Content Area General Math **Skills List No.** 26700, 27900
Sight & Sound 8.1.9

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find common denominators of two unlike fractions, when one denominator is a multiple of the second, and add the fractions.

Activities: What will be done, when, how much (time), by whom?

The teacher will remind the student that addition of fractions can be done only when the fractions have a common denominator. If you have the problem $\frac{1}{2} + \frac{3}{8}$, the first fraction must be rewritten so that it has a denominator of 8. Using the technique of writing equivalent fractions, $\frac{1}{2} = \frac{4}{8}$. Substituting $\frac{4}{8}$ for $\frac{1}{2}$ makes the problem become $\frac{4}{8} + \frac{3}{8} =$. Now the basic techniques of adding fractions come into play. Add the numerators, 4 and 3, and place it over the denominator, 8, giving a fraction of $\frac{7}{8}$, the teacher needs to remind the student that the denominators are never added.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to add pairs of unlike fractions when one denominator is a multiple of the second.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: Yes ______ **No** ______ **Date** ______

Teacher: ______ (Signature) ______ (Title)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________________________ **Age** ____________
Last First **or**
Grade ____________

Content Area General Math **Skills List No.** 26100, 27000, 28200
Sight & Sound 8.1.10

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the lowest common denominator of fractions by using multiples of the denominators.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the LCD - Multiples Flow Chart as a technique for finding the LCD. (See attached sheet.) The teacher may have to review the concept of multiples of a number. Once the student is comfortable with this concept, the flow chart makes the process of finding the Lowest Common Denominator. This is a streamlined method of a second method of using multiples. The second one has the student list the first several multiples of each denominator. For the fractions $\frac{5}{6}$, $\frac{1}{4}$ and $\frac{3}{8}$, it soon goes as follows:

4: 4, 8, 12, 16, 20, ㉔, 28, 32, 26, 40, 44, ㊽, 52
6: 6, 12, 18, ㉔, 30, 36, 42, ㊽, 54, 60
8: 8, 16, ㉔, 32, 40, ㊽, 56

Since 24 is the first set of common multiples, it becomes the lowest common denominator.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the lowest common denominator for groups of unlike fractions.

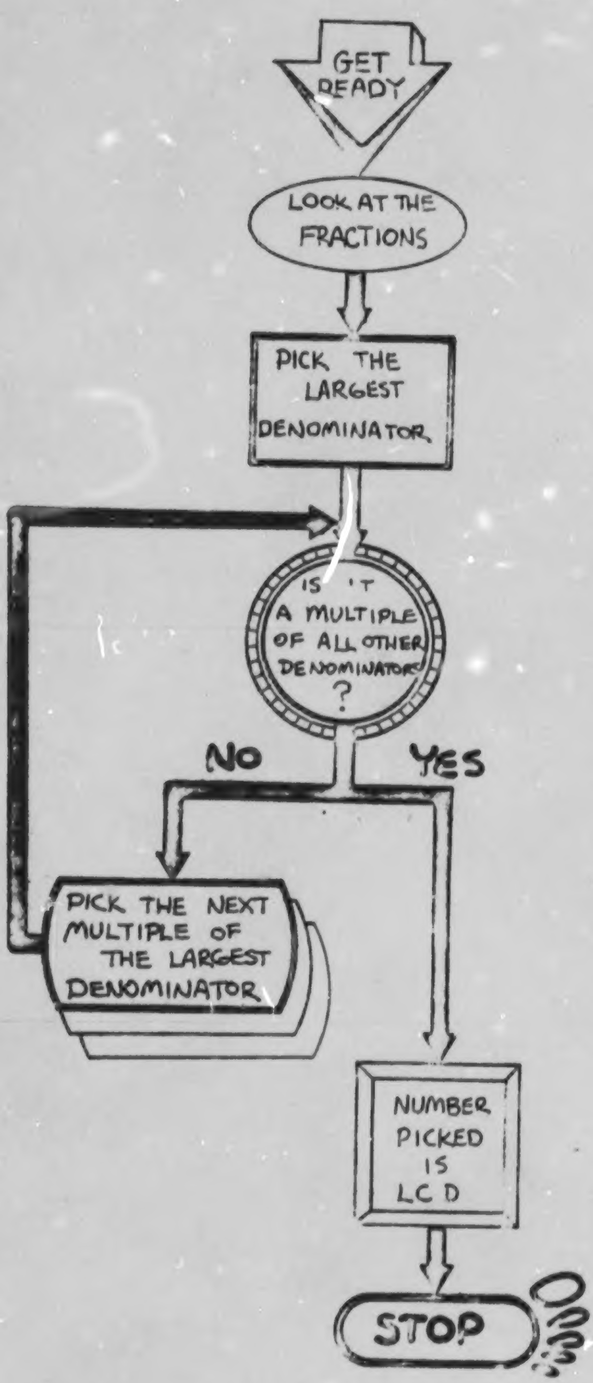
Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________________________
Signature **Title**

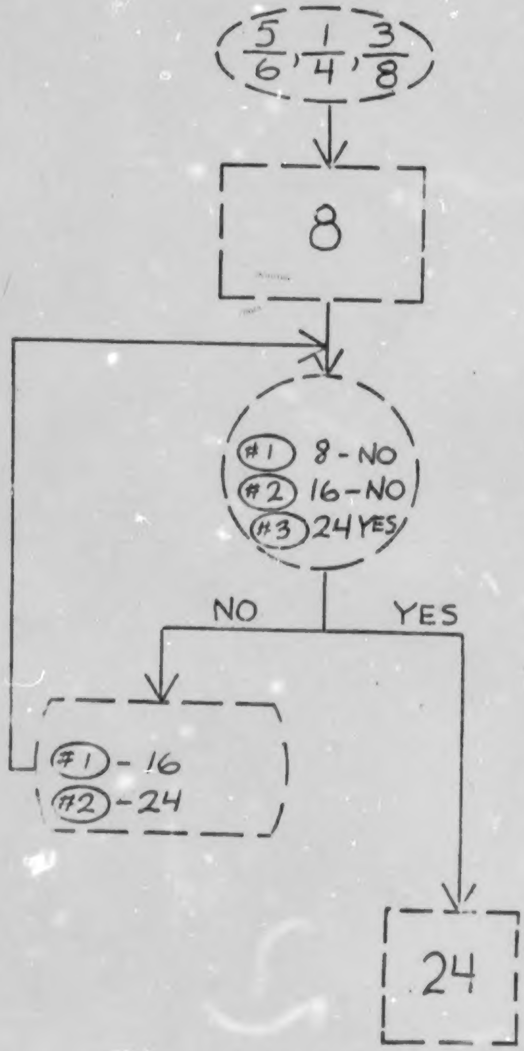
LCD FLOWCHART I

USING MULTIPLES


GET READY
LOOK AT THE FRACTIONS
PICK THE LARGEST DENOMINATOR
IS IT A MULTIPLE OF ALL OTHER DENOMINATORS ?
NO
YES
PICK THE NEXT MULTIPLE OF THE LARGEST DENOMINATOR
NUMBER PICKED IS LCD
STOP

EXAMPLE:

LCD $\left(\frac{5}{6}, \frac{1}{4}, \frac{3}{8}\right)$


5/6, 1/4, 3/8
8
#1 8 - NO
#2 16 - NO
#3 24 YES
NO
YES
#1 - 16
#2 - 24
24

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (Last) ____________ (First) **Age or Grade** ____________

Content Area General Math **Skills List No.** 26100, 27000, 28200
Sight & Sound 8.1.10.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the Lowest Common Denominator of fractions by using prime factors.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the method outlined in the LCD Prime Factor Flowchart (see attached sheet) to find the Lowest Common Denominator. She can point out to the student that the Lowest Common Denominator is a product of the prime factor of each number, the most times any of them occur as a factor in any number. In the example of $\frac{1}{10}$ and $\frac{5}{12}$, the factors of 10 are one 2 and one 5. The factors of 12 are two 2s and one 3. The Lowest Common Denominator must have as factors one 3, one 5, and two 2s. Multiplying these together gives a Lowest Common Denominator of 60.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the lowest common denominators of groups of fractions using prime factors.

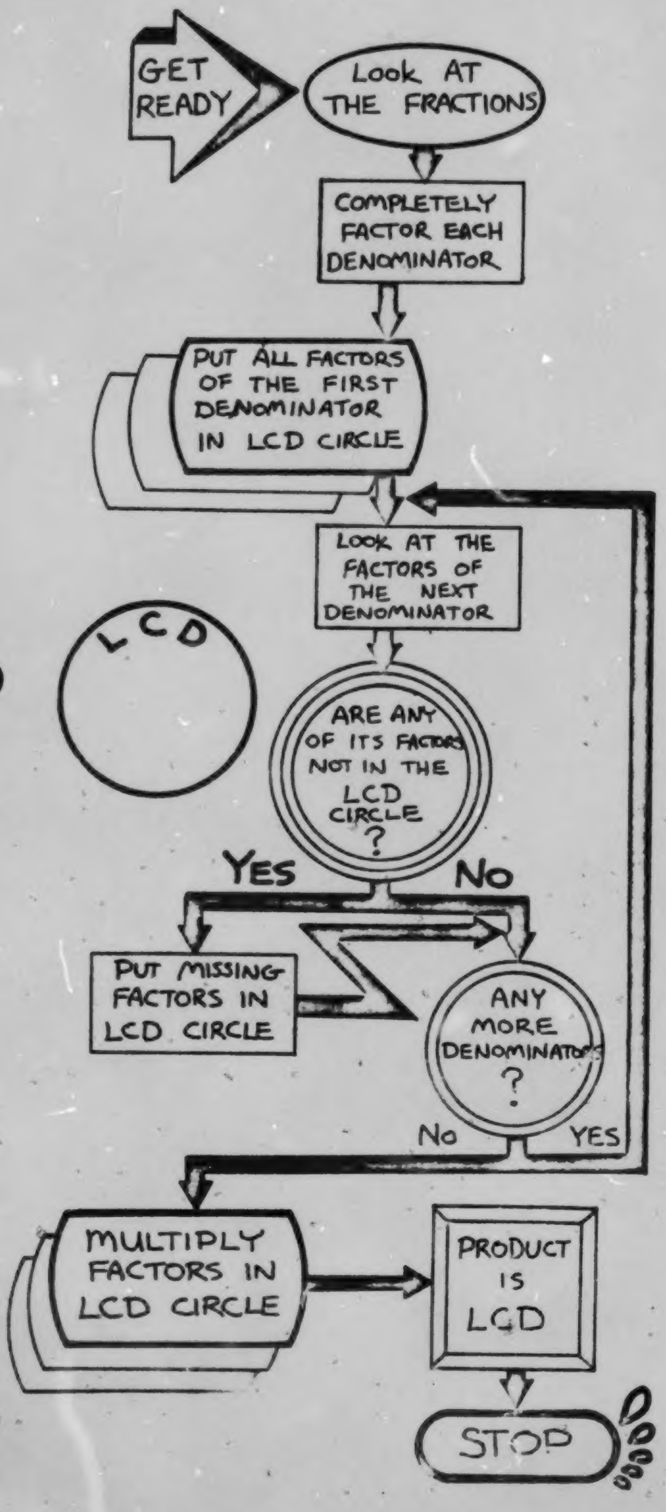
Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

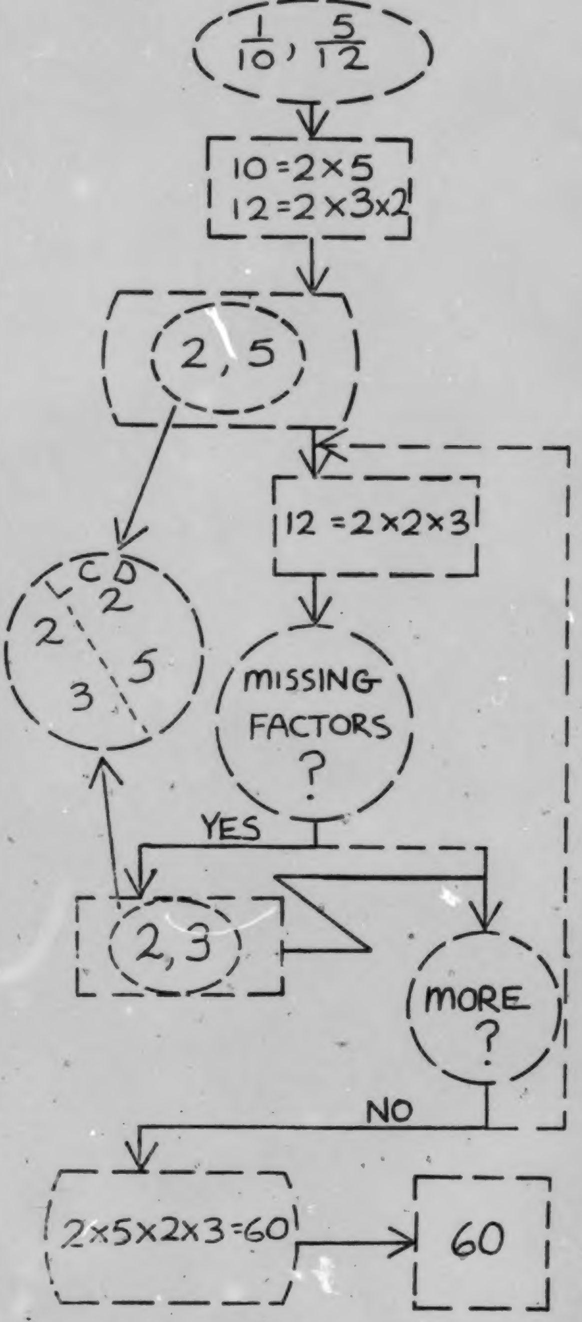
Teacher: ____________ (Signature) ____________ (Title)

LCD FLOWCHART II

USING PRIME FACTORS


GET READY
Look AT THE FRACTIONS
COMPLETELY FACTOR EACH DENOMINATOR
PUT ALL FACTORS OF THE FIRST DENOMINATOR IN LCD CIRCLE
LOOK AT THE FACTORS OF THE NEXT DENOMINATOR
LCD
ARE ANY OF ITS FACTORS NOT IN THE LCD CIRCLE ?
YES
No
PUT MISSING FACTORS IN LCD CIRCLE
ANY MORE DENOMINATORS ?
No
YES
MULTIPLY FACTORS IN LCD CIRCLE
PRODUCT IS LCD
STOP

Example: $\frac{1}{10}, \frac{5}{12}$


1/10, 5/12
10=2×5
12=2×3×2
2, 5
12 =2×2×3
LCD
2
2
5
3
MISSING FACTORS ?
YES
2,3
MORE ?
NO
2×5×2×3=60
60

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____ **Age** ____________
Last **First** **or**
Grade __________

Content Area General Math **Skills List No.** 26100, 27000, 28200
Sight & Sound 8.1.10.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add fractions with unlike denominators.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the Inchworm Fractions activity as one to demonstrate the addition of fractions with unlike denominators. As the student becomes more confident with this technique, the teacher can point out that the fractions need to have common denominators to be added, and that the multiple or prime number method of finding the LCD can be used. Once the LCD is found, then the fractions equivalents must be rewritten. After this is completed, then the fractions can be added. Thus to add $\frac{1}{6}$ and $\frac{3}{4}$, the common denominator of 12 must be found. $\frac{1}{6}$ is rewritten as $\frac{2}{12}$ and and $\frac{3}{4}$ as $\frac{9}{12}$. Adding the numerators gives $\frac{11}{12}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to add fractions with unlike denominators.

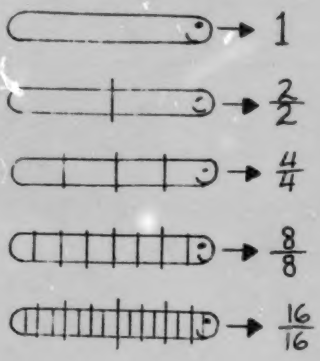
Total Days Participation ______________ **out of a possible** ________________

Criterion Attained: Yes ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

INCHWORM FRACTIONS

Lines have been drawn to show how the inch worm is divided.



Use the inch worms to fill in these patterns.

$\frac{1}{2} = \frac{\textcircled{2}}{4} = \frac{\bigcirc}{8} = \frac{\bigcirc}{16}$ $\quad \frac{1}{8} = \frac{\bigcirc}{16}$ $\quad \frac{6}{8} = \frac{\bigcirc}{16} = \frac{\bigcirc}{4}$

$\frac{1}{4} = \frac{\bigcirc}{8} = \frac{\bigcirc}{16}$ $\quad \frac{2}{8} = \frac{\bigcirc}{16} = \frac{\bigcirc}{4}$

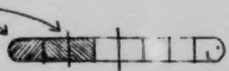
$\frac{2}{4} = \frac{\bigcirc}{8} = \frac{\bigcirc}{16} = \frac{\bigcirc}{2}$ $\quad \frac{3}{8} = \frac{\bigcirc}{16}$ $\quad \frac{7}{8} = \frac{\bigcirc}{16}$

$\frac{3}{4} = \frac{\bigcirc}{8} = \frac{\bigcirc}{16}$ $\quad \frac{4}{8} = \frac{\bigcirc}{16} = \frac{\bigcirc}{4} = \frac{\bigcirc}{2}$

$\frac{4}{4} = \frac{\bigcirc}{8} = \frac{\bigcirc}{16}$ $\quad \frac{5}{8} = \frac{\bigcirc}{16}$

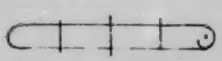
$\frac{8}{8} = \frac{\bigcirc}{16} = \frac{\bigcirc}{4} = \frac{\bigcirc}{2} = \bigcirc$

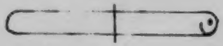
THE INCHWORM CAN HELP YOU ! . ADD LIKE FRACTIONS

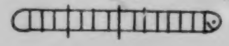
$\frac{1}{8} + \frac{2}{8} =$  $= \frac{3}{8}$

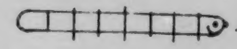
Shade in the parts to find these sums.

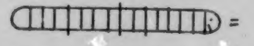
CHOMP
CHOMP

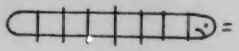
$\frac{2}{4} + \frac{1}{4} =$  $=$ ___

$\frac{1}{2} + \frac{1}{2} =$  $=$ ___ OR ___

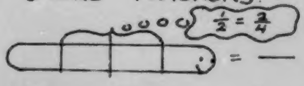
$\frac{1}{16} + \frac{7}{16} =$  $=$ ___ OR ___

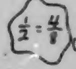
$\frac{4}{8} + \frac{3}{8} =$  $=$ ___

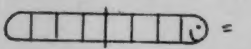
$\frac{5}{16} + \frac{9}{16} =$  $=$ ___ OR ___

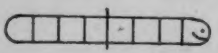
$\frac{1}{16} + \frac{2}{16} + \frac{3}{16} =$  $=$ ___ OR ___

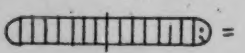
NOW TRY SOME UNLIKE FRACTIONS.

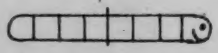
$\frac{1}{4} + \frac{1}{2} =$  $=$ ___

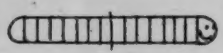


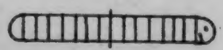
$\frac{1}{2} + \frac{1}{8} =$  $=$ ___

$\frac{3}{4} + \frac{1}{8} =$  $=$ ___

$\frac{2}{16} + \frac{1}{4} =$  $=$ ___ OR ___

$\frac{3}{8} + \frac{1}{4} =$  $=$ ___

$\frac{5}{8} + \frac{2}{16} =$  $=$ ___ OR ___

$\frac{5}{16} + \frac{1}{2} =$  $=$ ___

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ______________

Student Name ____ **Age** ____________
Last First or
Grade ____________

Content Area General Math **Skills List No.** 28800, 29100, 29400
Sight & Sound 8.1.11.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract fractions with common denominators.

Activities: What will be done, when, how much (time), by whom?

The teacher can use fraction bars (See attached sheet) to demonstrate the subtraction of fractions with common denominators. The teacher can use the bars drawn out on a sheet of paper, or the actual bars can be made out of wood or tag board. The teacher will have the student subtract or remove the colored sections of the second bar from the first bar. The difference in the subtraction is the amount of the first bar still covered. The teacher will point out as the student gets more confident that the numerator in the original problem, and the common denominator stays the same. The teacher will want to emphasize that the denominators are never subtracted.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

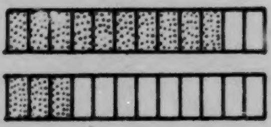
Given a teacher made test, the student will be able to subtract fractions with common denominators.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

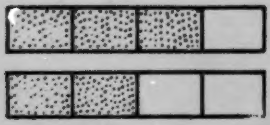
Teacher: ____
Signature Title

①



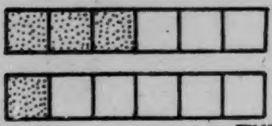
$$\begin{array}{r} \frac{10}{12} \\ -\ \frac{3}{12} \\ \hline \end{array}$$

②



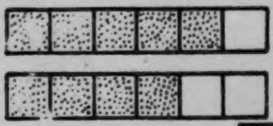
$$\begin{array}{r} \frac{3}{4} \\ -\ \frac{2}{4} \\ \hline \end{array}$$

③



$\frac{3}{6} - \frac{1}{6} = \square$

④



$\frac{5}{6} - \frac{4}{6} = \square$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ (**Last** / **First**) **Age or Grade** ______

Content Area General Math **Skills List No.** 28800, 29100, 29400
Sight & Sound 8.1.11.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract fractions with unlike denominators.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that addition and subtraction are operations that are closely related. The subtraction of fractions follow, many of the same rules as the addition of fractions. To do a problem like $\frac{3}{4} - \frac{1}{6}$, each fraction must be rewritten with a common denominator, in this case 12. $\frac{3}{4} = \frac{9}{12}$ and $\frac{1}{6} - \frac{2}{12}$. Thus the problem becomes $\frac{9}{12} - \frac{2}{12}$. Subtracting the numerators gives a differance of 7. Putting this number after the denominator gives an answer of $\frac{7}{12}$. As the process is discussed the teacher can continue to refer to the similarities to the additon process.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to subtract fractions with unlike denominators.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: Yes ______ **No** ______ **Date** ______

Teacher: ______ ______
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ District: ______________ Area ______________

For Dates ______________ to ______________

Student Name ______________ Age ______________
Last First or
Grade ______________

Content Area General Math Skills List No. 31800, 32100, 32400, 32700
Sight & Sound 8.1.12

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to divide one fraction by another fraction.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the fraction bar activities on Exact Fits (see attached sheet) to help develop the idea of dividing a fraction by a fraction. As the discussion continues, the student will become more familiar with the process, and the teacher can begin to develop the division algorithm. This need not be developed until the concept is well developed. The algorithm is as follows: $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$. This algorithm can be checked on each of the situations covered using the Fraction Bar Divisions.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide a fraction by a fraction.

Total Days Participation ______________ out of a possible ______________

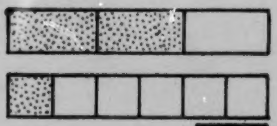
Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________________________
Signature Title

ACTIVITY CARDS- FRACTION BARS

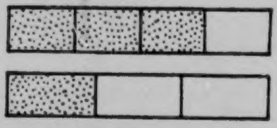
EXACT FITS

For the 2 bars I have taken, the shaded amount on the $\frac{1}{6}$ bar fits into the shaded amount on the $\frac{2}{3}$ bar exactly 4 times.



$\frac{2}{3} \div \frac{1}{6} = \boxed{4}$

With the two bars I have, there is no exact fit. The shaded amount on the $\frac{1}{3}$ bar fits into the shaded amount on the $\frac{3}{4}$ bar twice with something leftover, so this is not an exact fit.



Activity (1 or 2 students)

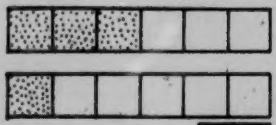
Pick any 2 fraction bars which are not zero bars. Compare these bars to see how many times the shaded amount of one of your bars fits into the shaded amount of the other. Do this for 10 pairs of bars. See how many exact fits you can get.

Repeat this activity with a classmate. Take turns choosing pairs of bars. See who can be the first to get 5 exact fits.

PRACTICING EXACT FITS

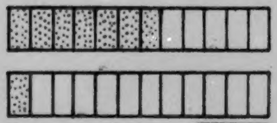
Write the fraction for each bar and divide the greater fraction by the smaller. The first two equations have been started for you.

①



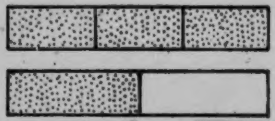
$\frac{3}{6} \div \frac{1}{6} = \boxed{\quad}$

②



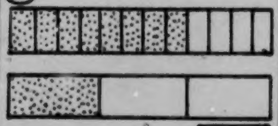
$\frac{7}{12} \div \frac{1}{12} = \boxed{\quad}$

③



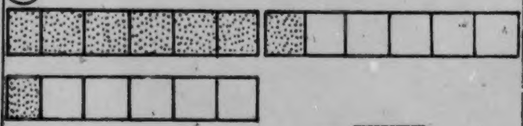
$\underline{\quad} \div \underline{\quad} = \boxed{\quad}$

④



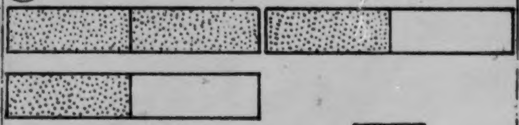
$\underline{\quad} \div \underline{\quad} = \boxed{\quad}$

⑤



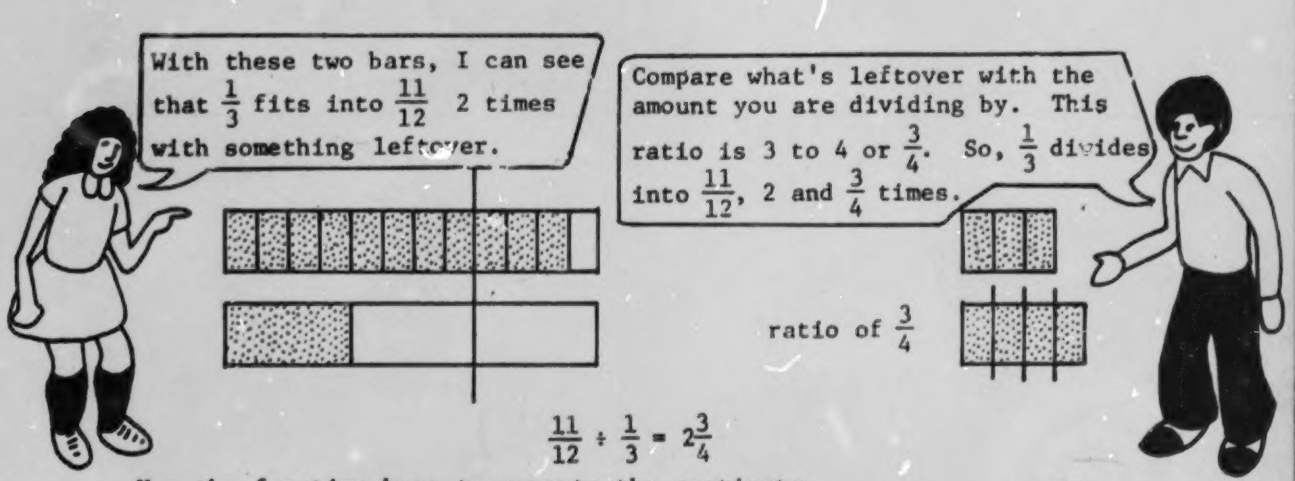
$\underline{\quad} \div \underline{\quad} = \boxed{\quad}$

⑥



$\underline{\quad} \div \underline{\quad} = \boxed{\quad}$

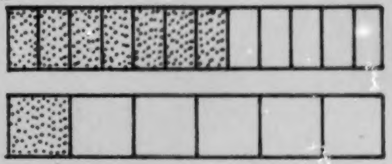
ACTIVITY CARDS - FRACTION BARS


With these two bars, I can see that $\frac{1}{3}$ fits into $\frac{11}{12}$ 2 times with something leftover.
Compare what's leftover with the amount you are dividing by. This ratio is 3 to 4 or $\frac{3}{4}$. So, $\frac{1}{3}$ divides into $\frac{11}{12}$, 2 and $\frac{3}{4}$ times.
ratio of $\frac{3}{4}$

$$\frac{11}{12} \div \frac{1}{3} = 2\frac{3}{4}$$

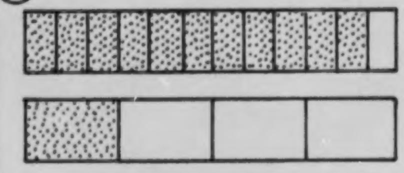
Use the fraction bars to compute the quotients.

①



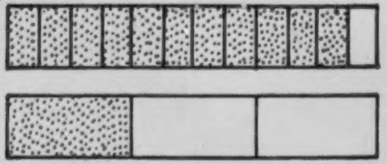
$\frac{7}{12} \div \frac{1}{6} = \boxed{}$

②



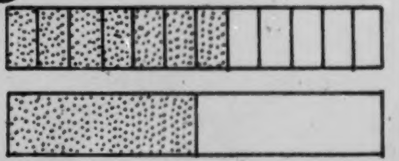
$\frac{11}{12} \div \frac{1}{4} = \boxed{}$

③



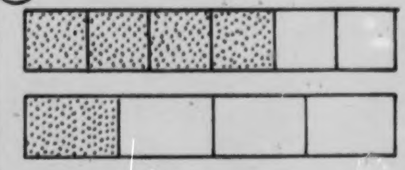
$\frac{11}{12} \div \frac{1}{3} = \boxed{}$

④



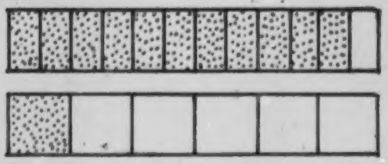
$\frac{7}{12} \div \frac{1}{2} = \boxed{}$

⑤



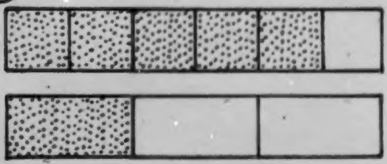
$\frac{4}{6} \div \frac{1}{4} = \boxed{}$

⑥



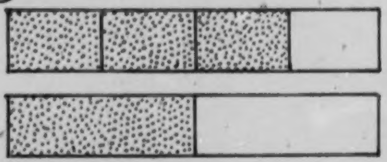
$\frac{11}{12} \div \frac{1}{6} = \boxed{}$

⑦



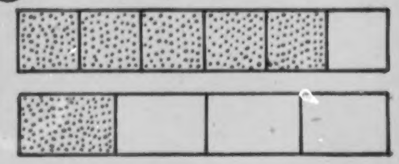
$\frac{5}{6} \div \frac{1}{3} = \boxed{}$

⑧



$\frac{3}{4} \div \frac{1}{2} = \boxed{}$

⑨



$\frac{5}{6} \div \frac{1}{4} = \boxed{}$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ **Age or Grade** ____________
Last **First**

Content Area General Math **Skills List No.** 25200, 26400
Sight & Sound 8.1.13

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the definition of a proper fraction, improper fraction and a mixed number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will give several examples of fractions to the student. He will point out to the student that a proper fraction is one that has a value of less than 1, and an improper fraction is one that has a value of one or more. An easy way to determine which type one is, is to look at the numerator and denominator. If the numerator is smaller than the denominator, it is a proper fraction. If it is the same or larger, then the fraction is an improper fraction. The teacher will also point out that a number that consists of a whole number and a fraction is called a mixed number.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify proper fractions, improper fractions, and mixed numbers.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age** ______________
Last First or
Grade ______________

Content Area General Math **Skills List No.** 27000
Sight & Sound 8.1.15

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to find the greatest common factor (gcf) of a pair of numbers.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that a good grasp of the concept of factors will help with the concept of writing equivalent fractions. The student will be reminded of what factors are, namely the numbers that will multiply to give another number for an answer. For example the factors of 12 are 1, 2, 3, 4, 6, 12. The student will also be encouraged to write the factors in ascending order. To find the greatest common factors of a pair of numbers, the student will need to find all the factors of each number. For example to find the greatest common factor between 18 and 24;

18: 1, 2, 3, 6, 9, 18
24: 1, 2, 3, 4, 6, 8, 12, 24

The numbers 1, 2, 3, and 6 are all common to both numbers. Since 6 is the largest of these four, it is the greatest common factor, the teacher will also want to point out that the gcf is the largest number that will divide evenly into both numbers.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the greastest common factor of given pairs of numbers.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature **Title**

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age or Grade** ______________

Last **First**

Content Area General Math **Skills List No.** 26400

Sight & Sound 8.1.16

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to write equivalent fractions with larger denominators.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the Fraction Bar Activity Cards (see attached sheet) to develop the concept of equivalent fractions. After the student has a good idea about what equivalent fractions are about, the concept of raising a fraction to higher terms can be dealt with.. The teacher will point out that the process is to find what number the original denominator was multiplied by to get the new denominator. That same number is then multiplied times the original numerator. This then gives the equivalent fraction in higher terms with the desired denominator (see attached sheet).

Criterion: What specific evidence will we accept to indicate that the objective was attained?

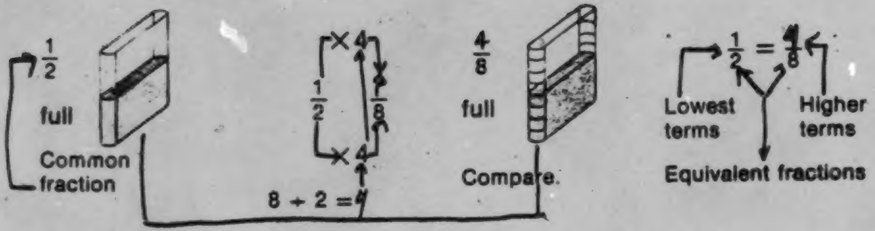
Given a teacher made test, the, student will be able to write equivalent fractions with larger denominators.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________

Signature **Title**



1/2
full
Common fraction
×4
1/2
4/8
×4
8 ÷ 2 = 4
4/8
full
Compare.
1/2 = 4/8
Lowest terms
Higher terms
Equivalent fractions

Get ready.

1. $\overset{\times ?}{\underset{\times 3}{\frac{1}{5} = \frac{3}{15}}}$

2. $\overset{\times ?}{\underset{\times ?}{\frac{2}{5} = \frac{8}{20}}}$

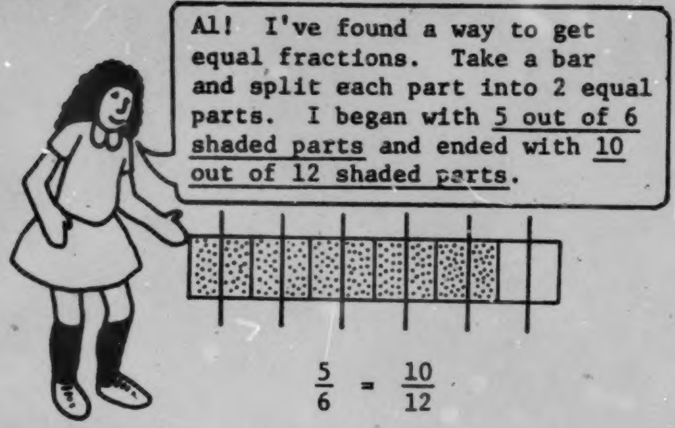
3. $\overset{\times 2}{\underset{\times 2}{\frac{1}{6} = \frac{?}{?}}}$

4. $\overset{\times 5}{\underset{\times 5}{\frac{3}{4} = \frac{?}{?}}}$

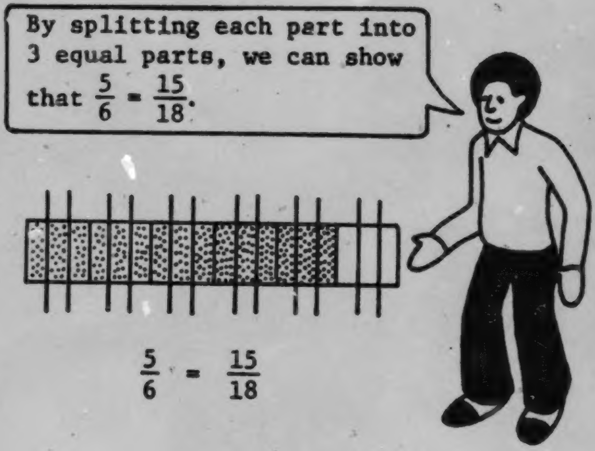
ACTIVITY CARDS - FRACTION BARS

MAKING EQUAL FRACTIONS

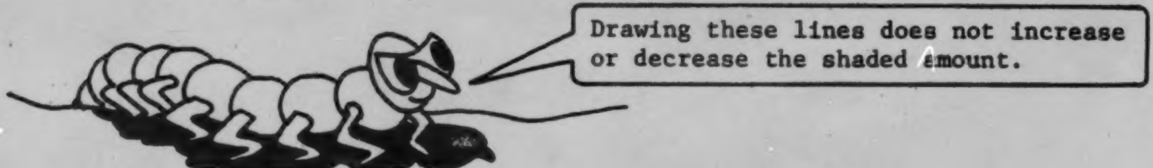
aterials Fraction bars


Al! I've found a way to get equal fractions. Take a bar and split each part into 2 equal parts. I began with 5 out of 6 shaded parts and ended with 10 out of 12 shaded parts.

$\frac{5}{6} = \frac{10}{12}$


By splitting each part into 3 equal parts, we can show that $\frac{5}{6} = \frac{15}{18}$.

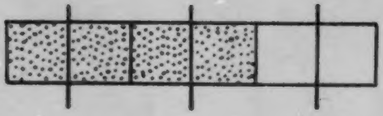
$\frac{5}{6} = \frac{15}{18}$


Drawing these lines does not increase or decrease the shaded amount.

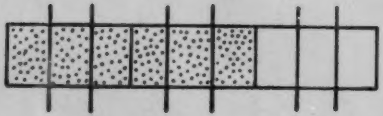
Activities (1 or 2 students)

1. Pick a fraction bar for the following activities.
   a. By drawing lines on the bar, split each part of the bar into 2 equal parts. Write the equation.
   b. Erase the marks on the bar, and this time split each part of the bar into 3 equal parts. Write the equation.
   c. Erase the marks on the bar. Now split each part of the bar into 4 equal parts. Write the equation.
2. Repeat these activities for a fraction bar of each color.

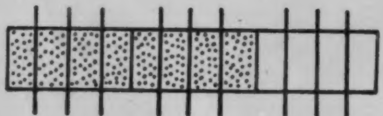
Examples



$\frac{2}{3} = \frac{4}{6}$



$\frac{2}{3} = \frac{6}{9}$

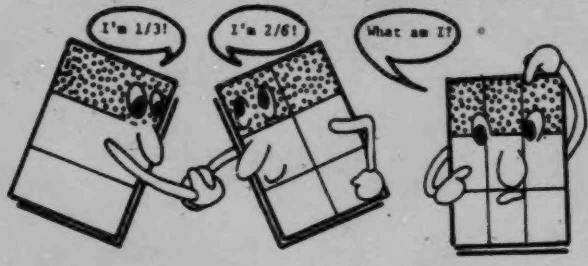


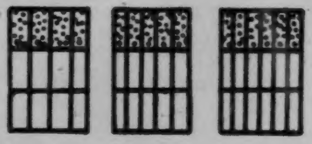
$\frac{2}{3} = \frac{8}{12}$

These examples show that $\frac{2}{3}$, $\frac{4}{6}$, $\frac{6}{9}$, and $\frac{8}{12}$ are fractions for the same amount.

FAIR EXCHANGE

Find the equivalent fractions in each row and answer the questions.


I'm 1/3!
I'm 2/6!
What am I?

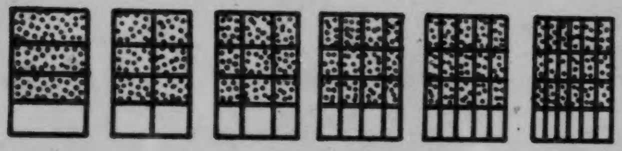


____ ____ ____

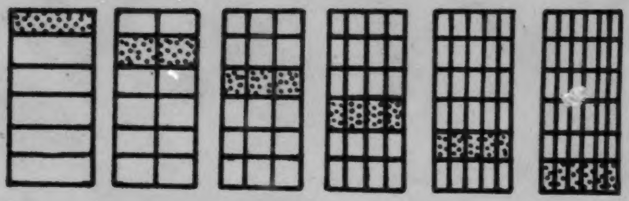
Name these.

Are the names equal to $\frac{1}{3}$?

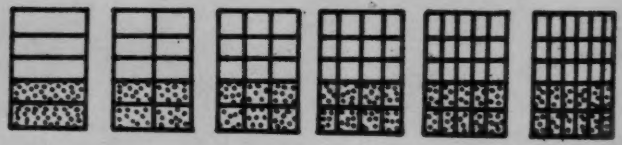
NAME THE FOLLOWING:



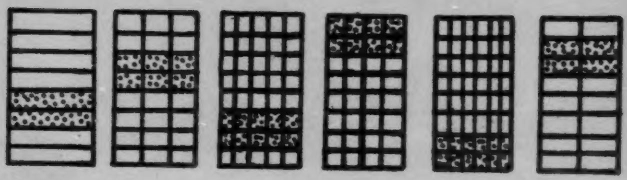
____ = ____ = ____ = ____ = ____ = ____



____ = ____ = ____ = ____ = ____ = ____



____ = ____ = ____ = ____ = ____ = ____



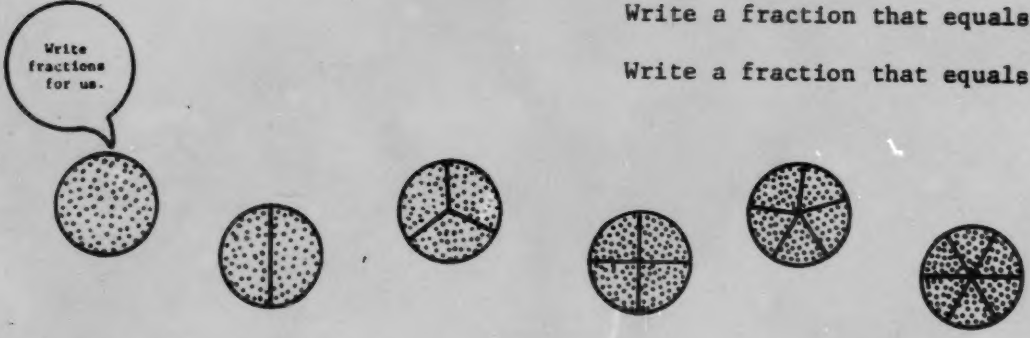
____ = ____ = ____ = ____ = ____ = ____

Does $\frac{1}{6} = \frac{3}{18}$? ____ Does $\frac{3}{18} = \frac{5}{30}$? ____ Does $\frac{1}{6} = \frac{5}{30}$? ____

Write a fraction that equals $\frac{12}{48}$. ____

Write a fraction that equals $\frac{6}{24}$. ____

Write a fraction that equals $\frac{2}{8}$. ____


Write fractions for us.

____ ____ ____ ____ ____ ____

Does $1 = \frac{8}{8}$? ____

Does $\frac{3}{3} = \frac{5}{5}$? ____

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ (**Last**) ______ (**First**) **Age or Grade** ______

Content Area General Math **Skills List No.** 25500, 26403A, 26403B

Sight & Sound 8.1.17

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change a mixed number to an improper fraction.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out to the student that a number like $2\frac{3}{4}$ is read 2 and $\frac{3}{4}$. He will also note that the word "and" often means addition. Thus $2\frac{3}{4}$ is equivalent to $2 + \frac{3}{4}$. The question now becomes how many fourths are in 2 whole. Since 1 whole equals $\frac{4}{4}$, then 2 whole equals $\frac{8}{4}$. This is then added to the fractional part $\frac{3}{4}$ to give $\frac{11}{4}$. (See attached sheet.) When the student feels comfortable with this, the teacher will point out a shortcut shown by the mixed number to improper fraction flow chart. (See attached sheet.) The process can be completed by multiplying the denominator times the whole number and adding the fraction numerator. This gives the new numerator, which is placed over the original denominator.

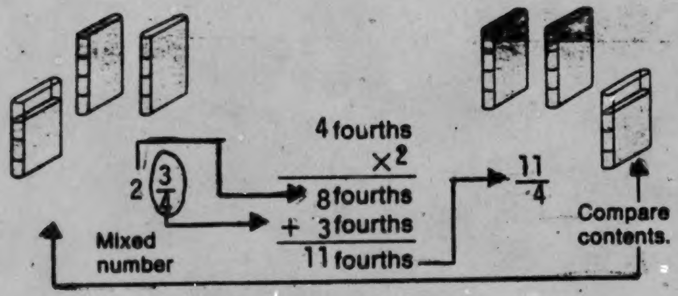
Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change mixed numbers into improper fractions.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: Yes ______ **No** ______ **Date** ______

Teacher: ______ (**Signature**) ______ (**Title**)


4 fourths
×2
8 fourths
+ 3 fourths
11 fourths
$2\frac{3}{4}$
Mixed number
$\frac{11}{4}$
Compare contents.

$2\frac{3}{4} = \frac{11}{4}$

Improper fraction

Get ready.

1. $2\frac{4}{5}$

10 fifths
+ 4 fifths
? fifths

$2\frac{4}{5} = \frac{?}{5}$

2. $3\frac{5}{7}$

21 sevenths
+ ? sevenths
? sevenths

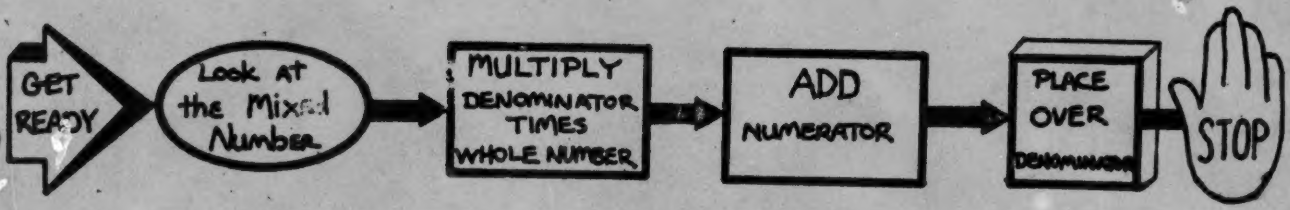
$3\frac{5}{7} = \frac{?}{7}$

3. $5\frac{1}{6}$

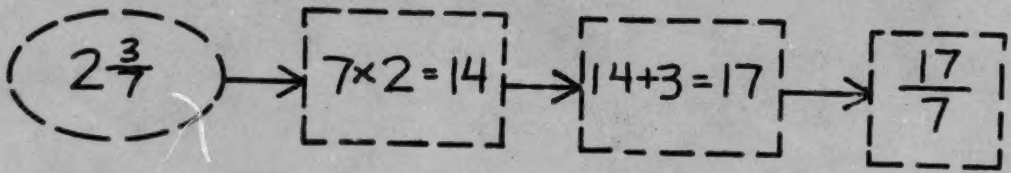
? sixths
+ ? sixth
? sixths

$5\frac{1}{6} = \frac{?}{?}$

Mixed to Improper


GET READY
Look at the Mixed Number
MULTIPLY DENOMINATOR TIMES WHOLE NUMBER
ADD NUMERATOR
PLACE OVER DENOMINATOR
STOP

Example: $2\frac{3}{7}$


$2\frac{3}{7}$
$7\times2=14$
$14+3=17$
$\frac{17}{7}$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: __________ **District:** __________ **Area** __________

For Dates __________ to __________

Student Name __________ Last __________ First **Age or Grade** __________

Content Area General Math **Skills List No.** 25200

Sight & Sound 8.1.18

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change an improper fraction to a mixed number.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the Renaming Flowchart (see attached sheet) to use as a streamlined guide for changing an improper fraction to a mixed number. She can note the fact to the student that a fraction is another way to write a division problem. Thus $\frac{13}{5}$ means $13 \div 5$. Doing the division gives an answer of $2\frac{3}{5}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change improper fractions into mixed numbers.

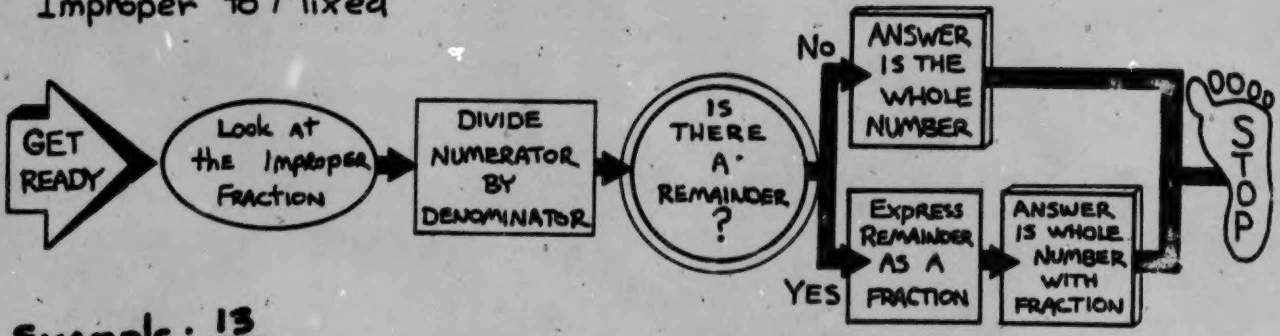
Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

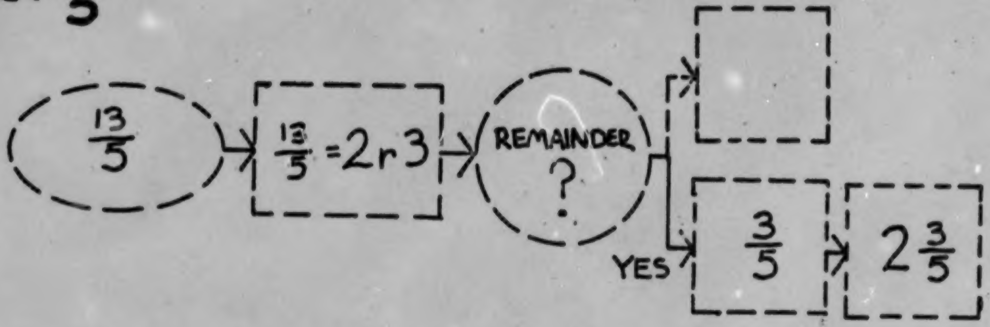
Teacher: __________ Signature __________ Title

RENAMING FLOWCHARTS

Improper to Mixed


GET READY
Look at the Improper Fraction
DIVIDE NUMERATOR BY DENOMINATOR
IS THERE A REMAINDER ?
No
ANSWER IS THE WHOLE NUMBER
YES
Express Remainder AS A FRACTION
ANSWER IS WHOLE NUMBER WITH FRACTION
STOP

Example: $\frac{13}{5}$


$\frac{13}{5}$
$\frac{13}{5}=2r3$
REMAINDER ?
YES
$\frac{3}{5}$
$2\frac{3}{5}$

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OP 8

School: ____________________ **District:** ____________________ **Area** ____________

For Dates ____________ to ____________

Student Name ______________________________________ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** 36002, 36003, 36004
Sight & Sound 8.1.19

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change a common fraction to a decimal number.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that a fraction is another way to write a division problem. That is, the fraction $\frac{2}{5}$ equivalent to the problem, 2 divided by 5. Since the 5 is a larger number, 2 will be rewritten as the decimal number 2.0 . The problem becomes $5\overline{)2.0}$. Dividing gives the result

$$\begin{array}{r} 0.4 \\ 5\overline{)\,2.0} \\ -0.0 \\ \hline 2.0 \\ -2.0 \\ \hline 0 \end{array}$$

Remember that the zero in this situation may be omitted. Thus the fraction $\frac{2}{5}$ is equivalent to the decimal number, .4 .

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a common fraction into a decimal number.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last**, **First**) **Age or Grade** ____________

Content Area General Math **Skills List No.** 36301, 36302
Sight & Sound 8.1.20.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change a decimal number to a common fraction in lowest terms.

Activities: What will be done, when, how much (time), by whom?

The teacher will review with the student what the name of a number like .18 really is. Many people call it POINT 18, rather than 18 HUNDRETHS, which is its real name. When a decimal number is given its proper name, it is a simple thing to rewrite it as a fraction. Simply place the number without the decimal point into the numerator, and the name of the place of the rightmost digit in the denominator. In the case of .18, the 8 is in the hundreths place, so the fraction becomes $\frac{18}{100}$. Now rewrite in lowest terms by finding the greatest common factor of 18 and 100. Since this is 2, the fraction becomes $\frac{9}{50}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change a decimal number to a common fraction in lowest terms.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________ (**Signature**, **Title**)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ to ______________

Student Name ____ **Age** __________
Last **First** **or**
Grade __________

Content Area Geometry **Skills List No.** 36301, 36302
Sight & Sound# 8.1.20.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to change a repeating decimal to a fraction.

Activities: What will be done, when, how much (time), by whom?

The attached activity, Repeating Decimals to Fractions, is a good way for the teacher to lead the student into the process of being able to change a repeating decimal to a fraction. As the activity proceeds, the teacher will have to remind the student about what a repeating decimal is, and maintaining equality across the equal sign. As the student goes through the process, he will be able to complete this process.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to change repeating decimals to fractions.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ____
Signature **Title**

Below are given several examples illustrating the algorithm for changing repeating decimals to fractions.

$.9999\cdots$

Let $N = .9999\cdots$
THEN

(Multiply by 10 because 1 digit repeats)

$$\begin{array}{rl} 10N = & 9.9999\cdots \\ -\ N = & .\overline{9}999\cdots \\ \hline 9N = & 9 \end{array} \qquad \text{(subtract)}$$

$$N = \frac{9}{9} = 1$$

$.47\overline{47}$

Let $N = .47\overline{47}$
THEN

(Multiply by 100 because 2 digits repeat)

$$\begin{array}{rl} 100N = & 47.47\overline{47} \\ -\ N = & .47\overline{47} \\ \hline 99N = & 47 \end{array}$$

$$N = \frac{47}{99}$$

$.125\overline{25}$

Let $N = .125\overline{25}$
THEN $10N = 1.25\overline{25}$
(Repeating part now
next to decimal point)
AND

(Multiply by 100 - 2 digits repeat)

$$\begin{array}{rl} 1000N = & 125.25\overline{25} \\ -\ 10N = & 1.25\overline{25} \\ \hline 990N = & \end{array}$$

$$N = \frac{124}{990} = \frac{62}{495}$$

$.27345\overline{345}$

Let $N = .27345\overline{345}$
THEN $100N = 27.345\overline{345}$

(Multiply by 1000 - 3 digits repeat)

$$\begin{array}{rl} 100000N = & 27345.\overline{345} \\ 100N = & 27.\overline{345} \\ \hline 99900N = & 27318 \end{array}$$

$$N = \frac{27318}{99900} = \frac{4553}{16650}$$

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ Last ______ First ______ **Age or Grade** ______

Content Area General Math **Skills List No.** 27606, 27607
Sight & Sound 8.1.21.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add mixed numbers without regrouping.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that this process is an application to the processes of adding whole numbers and then adding fractions. The process is outlined on the attached sheet. Since the fractions have a common denominator, the numerators are simply added, giving an answer to this part of $\frac{4}{8}$. This can be rewritten in lowest terms as $\frac{1}{2}$. Next the whole numbers are added, giving a final result of $6\frac{1}{2}$.

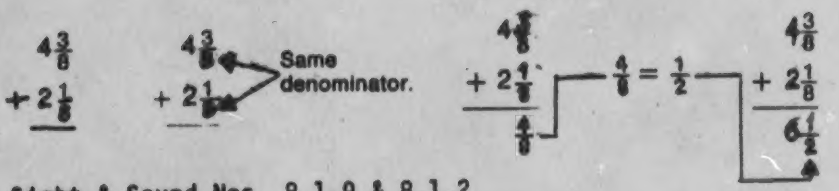
Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to add mixed numbers that do not involve regrouping.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: Yes ______ **No** ______ **Date** ______

Teacher: ______ **Signature** ______ **Title** ______



4 3/8
+ 2 1/8
Same denominator.
4/8
4/8 = 1/2
6 1/2

Sight & Sound Nos. 8.1.9 & 8.1.2

Get ready.

1. $\begin{array}{r} 3\frac{1}{5} \\ +\ \frac{2}{5} \\ \hline \end{array}$

2. $\begin{array}{r} 6\frac{1}{5} \\ +\ \frac{3}{5} \\ \hline \end{array}$

3. $\begin{array}{r} 4\frac{5}{9} \\ +\ \frac{2}{9} \\ \hline \end{array}$

4. $\begin{array}{r} 9\frac{3}{8} \\ +\ 7 \\ \hline \end{array}$

5. $\begin{array}{r} 12\frac{4}{5} \\ +\ 26 \\ \hline \end{array}$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age or Grade** ______________
Last First

Content Area General Math **Skills List No.** 27606, 27607
Sight & Sound 8.1.21.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add a whole number to a mixed number.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a number line to show the addition of a whole number to a mixed number. (See attached sheet.) As the student is doing the addition, the teacher can point out that this is a special case of adding mixed numbers. 7 can be thought of as $7\frac{0}{3}$. Setting the problem up, it looks like

$$\begin{array}{r} 7\frac{0}{3} \\ +\ 1\frac{1}{3} \\ \hline \end{array}$$

. Adding the fractions, and then the whole numbers gives $8\frac{1}{3}$ as a result.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

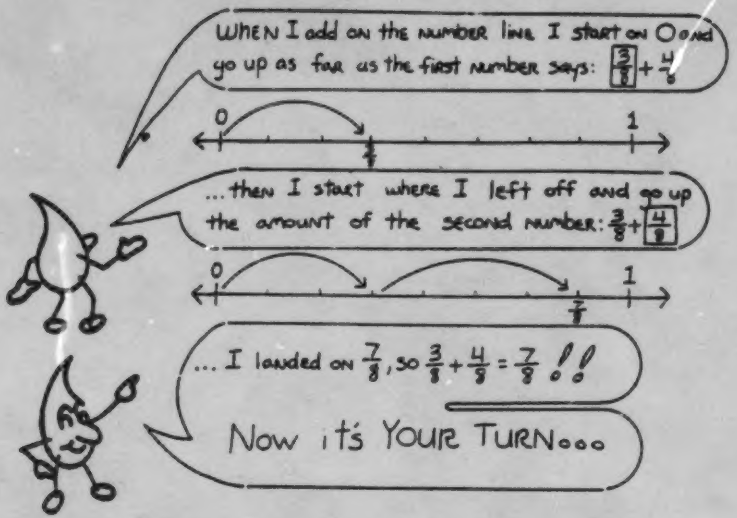
Given a teacher made test, the student will be able to add whole and mixed numbers together.

Total Days Participation ______________ **out of a possible** ______________

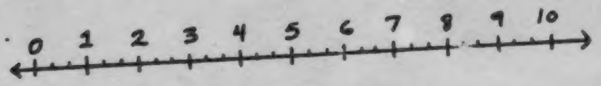
Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

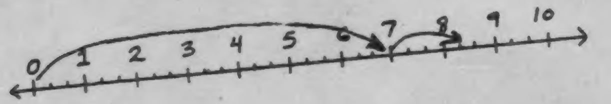
ADDITION of FRACTIONS


WHEN I add on the number line I start on 0 and go up as far as the first number says: $\boxed{\frac{3}{8}}+\frac{4}{8}$
0
1
$\frac{3}{8}$
...then I start where I left off and go up the amount of the second number: $\frac{3}{8}+\boxed{\frac{4}{8}}$
0
1
$\frac{7}{8}$
... I landed on $\frac{7}{8}$, so $\frac{3}{8}+\frac{4}{8}=\frac{7}{8}$!!
Now it's YOUR TURN...

$7+1\frac{1}{3}=$ ___


0
1
2
3
4
5
6
7
8
9
10

$7+1\frac{1}{3}=\underline{8\frac{1}{3}}$


0
1
2
3
4
5
6
7
8
9
10

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ **Last** ______ **First** ______ **Age or Grade** ______

Content Area General Math **Skills List No.** 27606, 27606
Sight & Sound 8.1.21.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to add a whole number to a fraction.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use a number line to show the addition of a whole number to a fraction. (See attached sheet.) As the student is doing the addition, the teacher can point out that this is a special case of adding mixed numbers. 3 can be thought of as $3\frac{0}{3}$. $\frac{2}{3}$ Can be thought of as $0\frac{2}{3}$. Setting the problem up. It looks like -

$$\begin{array}{r} 3\frac{0}{3} \\ 0\frac{2}{3} \\ + \\ \hline \end{array}$$

. Adding the fractions, and then the whole numbers gives $3\frac{2}{3}$ as an answer.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

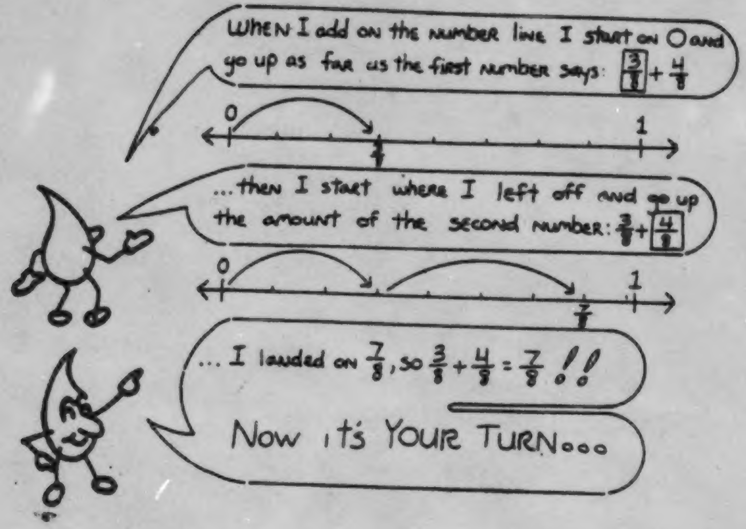
Given a teacher made test, the student will be able to add whole numbers and fractions together.

Total Days Participation ______ **out of a possible** ______

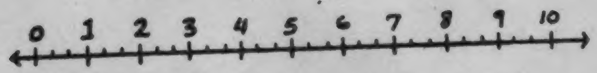
Criterion Attained: **Yes** ______ **No** ______ **Date** ______

Teacher: ______
Signature **Title**

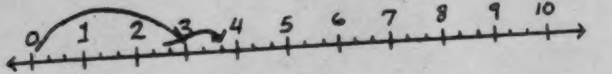
ADDITION of FRACTIONS


WhEN I add on the number line I start on 0 and go up as far as the first number says: $\boxed{\frac{3}{8}}+\frac{4}{8}$
0
$\frac{3}{8}$
1
...then I start where I left off and go up the amount of the second number: $\frac{3}{8}+\boxed{\frac{4}{8}}$
0
1
$\frac{7}{8}$
... I landed on $\frac{7}{8}$, so $\frac{3}{8}+\frac{4}{8}=\frac{7}{8}$!!
Now it's YOUR TURN...

$3+\frac{2}{3}=$ ___


0 1 2 3 4 5 6 7 8 9 10

$3+\frac{2}{3}=\underline{3}\frac{2}{3}$


0 1 2 3 4 5 6 7 8 9 10

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ ____________ **Age** ____________
Last First or
Grade ____________

Content Area General Math **Skills List No.** Sight & Sound 8.1.22

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to add mixed numbers with regrouping.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note that this process is an application to the processes of adding whole numbers and adding fractions. The process is outlined on the attached sheet. Since the fractions have a common denominator, the two numerators are sumply added, giving an answer to this part of $\frac{10}{8}$. This is equivalent to the mixed number $1\frac{2}{8}$, which can be simplified to $1\frac{1}{4}$. This must now be added to the whole numbers, the 2 and the 3. Adding these numbers gives a result of $6\frac{1}{4}$.

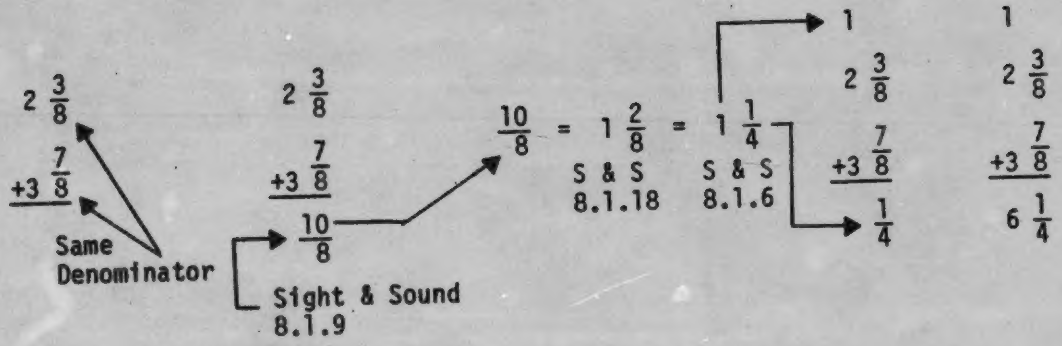
Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to add mixed numbers that involve regrouping.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____________
Signature Title



$2\frac{3}{8}$
$+3\frac{7}{8}$
Same Denominator
$2\frac{3}{8}$
$+3\frac{7}{8}$
$\frac{10}{8}$
Sight & Sound 8.1.9
$\frac{10}{8} = 1\frac{2}{8} = 1\frac{1}{4}$
S & S 8.1.18
S & S 8.1.6
1
$2\frac{3}{8}$
$+3\frac{7}{8}$
$\frac{1}{4}$
1
$2\frac{3}{8}$
$+3\frac{7}{8}$
$6\frac{1}{4}$

▼ **Get ready. Find the missing numbers.**

1. $\frac{9}{7} = 1\frac{?}{7}$
2. $\frac{7}{5} = 1\frac{?}{5}$
3. $\frac{14}{8} = 1\frac{?}{8} = 1\frac{?}{4}$
4. $\frac{12}{10} = 1\frac{?}{10} = 1\frac{?}{5}$

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age** ______________
Last **First** **or**
Grade ______________

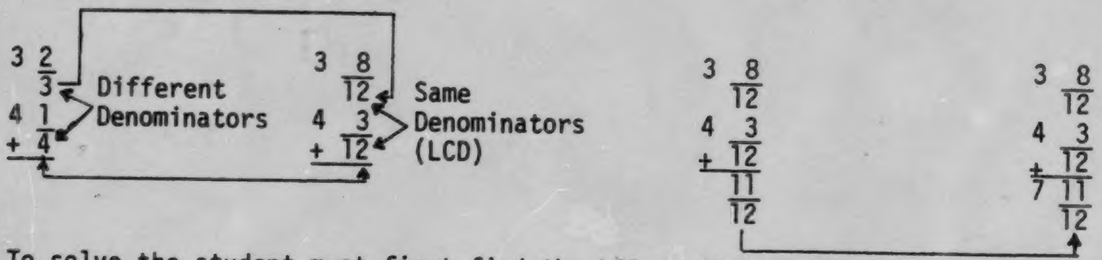
Content Area General Math **Skills List No.** 27907, 27908, 28207, 28208
Sight & Sound 8.1.23.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add mixed numbers, with the fractions having different denominations, without regrouping.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that this is an application of the process of adding whole numbers and adding fractions.



To solve the student must first find the LCD of the two denominators, in this case 12. Next rewrite the numerators. This allows the student to add the fractions. and finally the whole numbers are added.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to add mixed numbers, with the fractions having different denominators, without regrouping.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ (Last) ____________ (First) **Age or Grade** ____________

Content Area General Math **Skills List No.** 27907, 27908, 28207, 28808

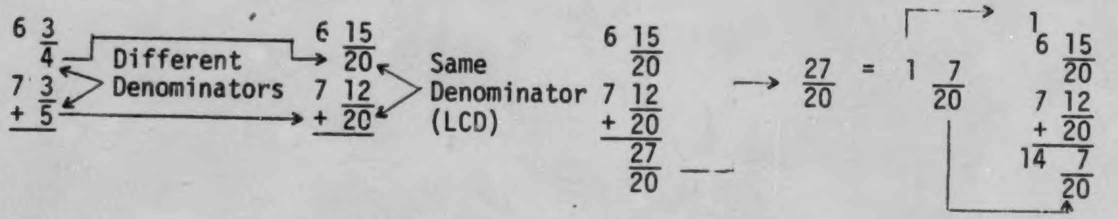
Sight & Sound 8.1.23.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to add mixed numbers, with the fractions having different denominators, with regrouping.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note that this is an application of the process of adding whole numbers and adding fractions.



$6\frac{3}{4} + 7\frac{3}{5}$
Different Denominators
$6\frac{15}{20} + 7\frac{12}{20}$
Same Denominator (LCD)
$6\frac{15}{20} + 7\frac{12}{20} = \frac{27}{20}$
$\frac{27}{20} = 1\frac{7}{20}$
1
$6\frac{15}{20} + 7\frac{12}{20} = 14\frac{7}{20}$

To solve, the student must first find the LCD of the two denominators, in this case 20. This allows the fractions to be rewritten, and then added. The improper fraction is then changed into a mixed number, which is finally added to the two whole numbers.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to add mixed numbers, with the fractions having different denominators, with regrouping.

Total Days Participation ____________ out of a possible ____________

Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ____________ (Signature) ____________ (Title)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________________ (Last) (First) **Age** ______ or **Grade** ______

Content Area General Math **Skills List No.** 28800

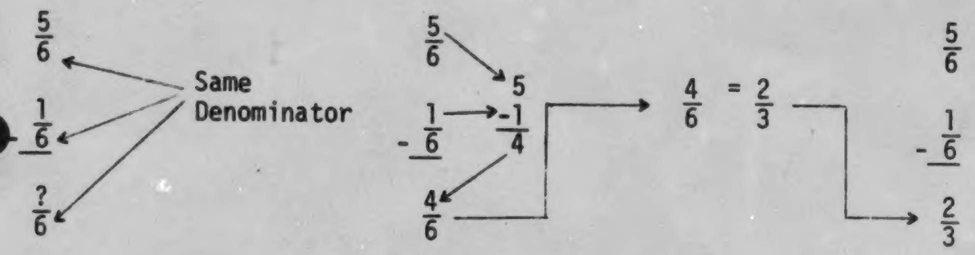
Sight & Sound 8.1.24

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract one fraction from another, with the same denominators.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that this process is very similar to that of the addition of fractions. The denominators must be the same before the subtraction can take place.



Once the student has determined that the denominators are the same, the second numerator is subtracted, and the difference is placed over the denominator. This fraction is then simplified, which gives the result of the fraction.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to subtract common fractions from each other.

Total Days Participation __________ out of a possible __________

Criterion Attained: Yes ________ No ________ Date ________

Teacher: ______________________________ (Signature) (Title)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ ____________ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** Sight & Sound 8.1.25.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to subtract a mixed number from a whole number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use a diagram like the one on the attached page to provide a more concrete example for this subtraction. The original number, 4, is first drawn out. The number to be subtracted, is then shaded. The remainder, $2\frac{3}{4}$, is then the result of the subtraction. As the student becomes more aware of the system, the teacher can introduce the subtraction procedure, pointing out that it is similar to adding mixed numbers. The Flow Diagram shows the procedure. One of the whole numbers must be divided up into fourths, (the name of the fraction being subtracted). This transforms the 4 to $3\frac{4}{4}$. Now the student can do the subtraction. First subtract the fractions, giving $\frac{3}{4}$, and finally the whole numbers. Thus $4 - 1\frac{1}{4} = 2\frac{3}{4}$.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

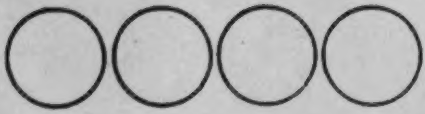
Given a teacher made test, the student will be able to subtract whole numbers from mixed numbers.

Total Days Participation ____________ **out of a possible** ____________

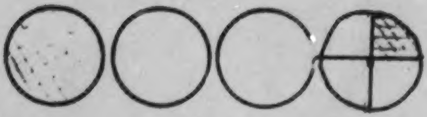
Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____________________________
Signature **Title**

$$\begin{array}{r} 4 \\ \underline{-\ 1\frac{1}{4}} \end{array}$$



$$\begin{array}{r} 4 \\ \underline{-\ 1\frac{1}{4}} \\ 2\ 3/4 \end{array}$$



$$\begin{array}{r} 4 \\ \underline{-1\ \frac{1}{4}} \end{array}$$

$$\begin{array}{rl} 3\ \frac{4}{4} & \leftarrow \text{Same Denominator} \\ \underline{-1\ \frac{1}{4}} & \swarrow \end{array}$$

$$\begin{array}{r} 3\ \frac{4}{4} \\ \underline{-1\ \frac{1}{4}} \\ \frac{3}{4} \end{array}$$

$$\begin{array}{rcr} 3\ \frac{4}{4} & \longrightarrow & 4 \\ \underline{-1\ \frac{1}{4}} & & \underline{-1\ \frac{1}{4}} \\ 2\ \frac{3}{4} & & 2\ \frac{3}{4} \end{array}$$

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ______________

Student Name ____ **Age** ____________
Last **First** **or**
Grade ____________

Content Area General Math **Skills List No.** Sight & Sound 8.1.25.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract a whole number from a mixed number.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a diagram like the one on the attached page to provide a more concrete example to this subtraction. The teacher will point out that the original number is drawn out, and the number to be subtracted is shaded in. What is left is the result of the subtraction. As the student becomes more aware of the system, the teacher can introduce the subtraction procedure, pointing out that it is similar to adding a whole number and a mixed number. 2 could be rewritten as $2\frac{0}{4}$.

Thus the problem becomes $4\frac{3}{4} - 2\frac{0}{4}$. Subtracting the fractions with common denominator gives $\frac{3}{4}$, and subtracting the whole numbers gives 2, so $4\frac{3}{4}$.

$$\begin{array}{r} 4\frac{3}{4} \\ -\ 2\frac{0}{4} \\ \hline 2\frac{3}{4} \end{array}$$

Criterion: What specific evidence will we accept to indicate that the objective was attained?

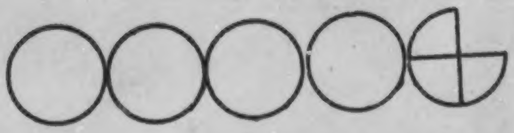
Given a teacher made test, the student will be able to subtract whole numbers from mixed numbers.

Total Days Participation ____________ **out of a possible** ______________

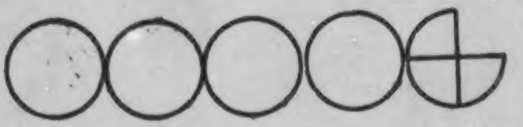
Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

$$\begin{array}{r} 4\frac{3}{4} \\ \underline{-\ 2} \end{array}$$



$$\begin{array}{r} 4\frac{3}{4} \\ \underline{-\ 2} \\ 2\ 3/4 \end{array}$$



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

chool: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Last** **First** **Age or Grade** ______________

Content Area General Math **Skills List No.** Sight & Sound 8.1.25.3

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract a mixed number from a mixed number without borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a diagram like the one on the attached page to provide a more concrete example for this subtraction. The original number, $5\frac{8}{6}$ is first drawn out. The number to be subtracted is then shaded in. The remainder of the original number is the result of the subtraction. After the subtraction is complete, the fraction is simplified to $\frac{2}{3}$. As the student becomes more aware of the concept, the teacher can introduce the subtraction procedure. She can point out to the student that it is similar to adding mixed numbers. The Flow Diagram on the other sheet shows the procedure. The student will first notice that the denominators of the fractions are the same. The numerators are then subtracted and the result, 4, is placed over the denominator. Simplifing gives a value of $\frac{2}{3}$. Finally the whole numbers are subtracted, giving a result of $2\frac{2}{3}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

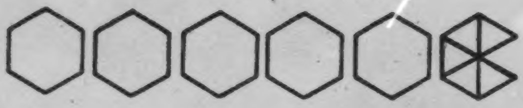
Given a teacher made test, the student will be able to subtract mixed numbers without borrowing.

Total Days Participation ______________ **out of a possible** ______________

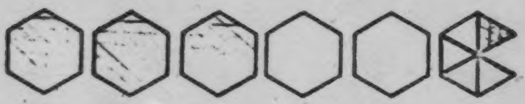
Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ **Signature** **Title**

$$\begin{array}{r} 5\frac{5}{6} \\ -\ 3\frac{1}{6} \\ \hline \end{array}$$



$$\begin{array}{r} 5\frac{5}{6} \\ -\ 3\frac{1}{6} \\ \hline 2\ 4/6 \end{array}$$



$$\begin{array}{r} 5\ \frac{5}{6} \\ -3\ \frac{1}{6} \\ \hline \end{array}$$

$$\begin{array}{r} 5\ \frac{5}{6} \\ -3\ \frac{1}{6} \\ \hline \end{array}$$

Same Denominators

$$\begin{array}{r} 5\ \frac{5}{6} \\ -3\ \frac{1}{6} \\ \hline \frac{4}{6} \end{array} \longrightarrow \frac{4}{6} = \frac{2}{3}$$

$$\begin{array}{r} 5\ \frac{5}{6} \\ -3\ \frac{1}{6} \\ \hline 2\ \frac{2}{3} \end{array}$$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ______________________ (**Last** / **First**) **Age or Grade** ____________

Content Area General Math **Skills List No.** Sight & Sound 8.1.26

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract mixed numbers with like denominators using borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a diagram like the one on the attached page to provide a more concrete example for this subtraction. The original number $6\frac{1}{4}$ is first drawn out. The number $1\frac{3}{4}$ is then shaded in. The student will notice that one of the whole circles must be divided into fourths so that all three fourths can be shaded in. Then the whole number, 1, is shaded. The remainder of the original number, $4\frac{2}{4}$ is the result of the subtraction. Finally the $\frac{2}{4}$ can be simplified, leaving the result as $4\frac{1}{2}$. As the student becomes aware of the concept, the teacher can introduce the subtraction procedure. He can point out to the student that this is an application of subtracting mixed numbers without borrowing. The Flow Diagram on the attached sheet shows the procedure. The first step is to subtract the fractions but $\frac{3}{4}$ is larger than $\frac{1}{4}$, so one of the whole numbers is made into fourths. This makes $6\frac{1}{4} = 5\frac{5}{4}$. Now subtracting the fractions gives $\frac{2}{4}$, which simplifies to $\frac{1}{2}$. Subtracting the whole numbers gives a final result of $4\frac{1}{2}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

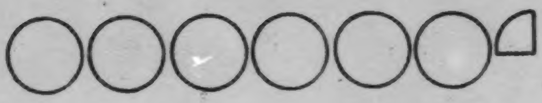
Given a teacher made test, the student will be able to subtract mixed numbers with like denominators using borrowing.

Total Days Participation ____________ **out of a possible** ____________

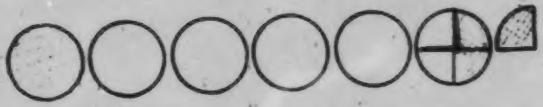
Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ______________________
Signature **Title**

$$\begin{array}{r} 6\frac{1}{4} \\ -\ 1\frac{3}{4} \\ \hline \end{array}$$



$$\begin{array}{r} 6\frac{1}{4} \\ -\ 1\frac{3}{4} \\ \hline 4\,{}^{2}/_{4} \end{array} = 4\,{}^{1}/_{2}$$



$$\begin{array}{r} 6\,\frac{1}{4} \\ -1\,\frac{3}{4} \\ \hline \end{array} \xrightarrow{\qquad} \begin{array}{r} 5\,\frac{5}{4} \\ -1\,\frac{3}{4} \\ \hline \end{array}$$

Fraction Too Small

$$\begin{array}{r} 5\,\frac{5}{4} \\ -1\,\frac{3}{4} \\ \hline \frac{2}{4} \end{array} \rightarrow \frac{2}{4} = \frac{1}{2} \rightarrow \begin{array}{r} 5\,\frac{5}{4} \\ -1\,\frac{3}{4} \\ \hline 4\,\frac{1}{2} \end{array}$$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________ **Age** __________
Last **First** **or**
Grade __________

Content Area General Math **Skills List No.** 29100, 29400
Sight & Sound 8.1.27.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract mixed numbers with different denominators without borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher will remind the student that subtraction can not take place unless the fraction denominators are equal. If they are not, the student must find the lowest common denominator so that equivalent fractions can be written. The teacher can use the flow diagram to aid the student in the solution of the problem. The student must first rewrite the fractions using LCD's. Having accomplished this, the subtraction of the fractions take place. Finally the whole numbers are subtracted. That leaves a difference in this problem of $3\frac{1}{9}$.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to subtract mixed numbers with different denominators without borrowing.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: __________ **District:** __________ **Area** __________

For Dates __________ **to** __________

Student Name __________ **Last** __________ **First** **Age** __________ **or Grade** __________

Content Area General Math **Skills List No.** 29100, 29400

Sight & Sound 8.1.27.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract mixed numbers with different denominators with borrowing.

Activities: What will be done, when, how much (time), by whom?

The teacher will remind the student that subtraction cannot take place unless the fraction denominators are equal. If they are not, the student must find the lowest common denominator so that equivalent fractions can be written.

The teacher can use a flow diagram to aid the student in the solution of the problem. The student must first rewrite the fractions using LCD's. The student will then note that the top fraction is smaller than the second one. The top number must be rewritten so that the subtraction can take place. After subtracting the fractions, the final step is to subtract the whole numbers.

$$\begin{array}{r|r|r|r|r}
8\frac{2}{3} \leftarrow \text{Different} & 8\frac{10}{15} \leftarrow \text{Fraction} & 7\frac{25}{15} & 7\frac{25}{15} & 7\frac{25}{15} \\
\underline{-2\frac{4}{5}} \leftarrow \text{Denominators} & \underline{-5\frac{12}{15}} \quad \text{Too Small} & \underline{-2\frac{12}{15}} & \underline{-2\frac{12}{15}} & \underline{-2\frac{12}{15}} \\
 & & & \frac{13}{15} & 5\frac{13}{15}
\end{array}$$

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to subtract mixed numbers with different denominators with borrowing.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: __________ **Signature** __________ **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math **Skills List No.** 31502, 31503
Sight & Sound 8.1.28.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply a fraction times a mixed number.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that multiplying a fraction times a mixed number is an application of the concept of multiplying fractions. The flow chart on the following page is a good aid for the teacher to use in guiding the student through this process. The teacher will show the student that to multiply easily by a mixed number, the mixed number must first be changed to an improper fraction. Then the basic concept of multiplication applies. The numerators are multiplied, the denominators are multiplied, and the new numerator is placed over the denominator. If this is an improper fraction, it is then transformed by the student into a mixed number, with the fraction written in lowest terms.

$$\frac{3}{4} \times 1\frac{2}{3} \;\Big|\; \frac{3}{4} \times \frac{5}{3} = \frac{3 \times 5}{4 \times 3} = \frac{15}{12} = 1\frac{3}{12} = 1\frac{1}{4}$$

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to multiply a fraction times a mixed number.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

hool: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ ____________
Last **First**

Age or Grade ____________

Content Area General Math **Skills List No.** 31502, 31503
Sight & Sound 8.1.28.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply mixed numbers together.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that multiplying mixed numbers together is an application of the concept of multiplying fractions.
The flow chart on the following page is a good aid for the teacher to use in guiding the student through the process.
The student will be shown that to multiply mixed numbers together easily, they need to be rewritten as fractions, when this is done, then the basic concept of multiplication applies. The numerators are multiplied, the denominators are multiplied and the new numerator is placed over the new denominator. If this is an improper fraction, it must be rewritten as a mixed number by the student and placed in lowest terms.

$$1\frac{1}{3} \times 1\frac{3}{4} \;\Big|\; \frac{4}{3} \times \frac{7}{4} = \frac{4 \times 7}{3 \times 4} = \frac{28}{12} = 2\frac{4}{12} = 2\frac{1}{3}$$

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to multiply mixed numbers together.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________ ____________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age or Grade** __________
Last **First**

Content Area General Math **Skills List No.** 31502, 31503
Sight & Sound 8.1.28.3

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to multiply a whole number times a fraction.

Activities: What will be done, when, how much (time), by whom?

The teacher will note that multiplying a fraction times a whole number is an application of the concept of multiplying fractions.

The flow chart on the following page is a good aid for the teacher to use in guiding the student through the process.

The student will be shown that to multiply easily by a whole number the whole number needs to be rewritten as a fraction. The teacher will remind the student that any whole number is equivalent to that same number over 1. When this is done, then the basic concept of multiplication applies. The numerators are multiplied, the denominators are multiplied and the new numerator is placed over the new denominator. If this is an improper fraction, it is transformed into a mixed number by the student, with the fraction written in lowest terms.

$$3 \times \frac{4}{7} \quad \Big| \quad \frac{3}{1} \times \frac{4}{7} = \frac{3 \times 4}{1 \times 7} = \frac{12}{7} = 1\frac{5}{7}$$

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to multiply a whole number times a fraction.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ____________ **to** ______________

Student Name ____ **Age** __________
Last First **or**
Grade __________

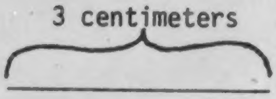
Content Area General Math **Skills List No.**
Sight & Sound 8.1.29

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

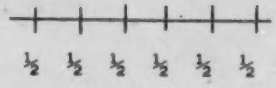
The student will be able to divide a whole number by a fraction with a numerator of 1.

Activities: What will be done, when, how much (time), by whom?

The teacher can use a ruler to show division by a fraction. For example to divide 3 by 1/2 (3 ÷ 1/2) the student is encouraged to think of division as a repeated subtraction. The ruler activity goes as follows. First, have the student draw a line segment three centimeters long.



Then divide it into 1/2 centimeter units.



Then the student will count the number of segments - 1 | 2 | 3 | 4 | 5 | 6 | .

This suggests that 3 ÷ 1/2 = 6. The teacher can then introduce the idea to the student that since multiplication and division are inverse operations, that division by a fraction is equal to multiplication by the reciprocal of that number. This would mean that 3 ÷ 1/2 = 3 x 2/1 = 3/1 x 2/1 = 3x2/1x1 = 6/1 = 6.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide whole numbers by fractions whose numerators are 1.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: Yes ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ (**Last** / **First**) **Age or Grade** ______________

Content Area General Math **Skills List No.** 32401

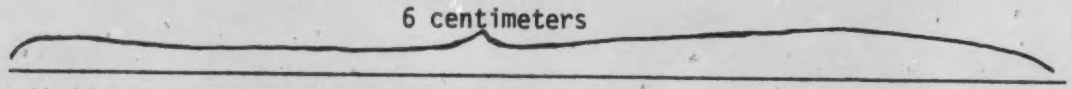
Sight & Sound 8.1.30

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

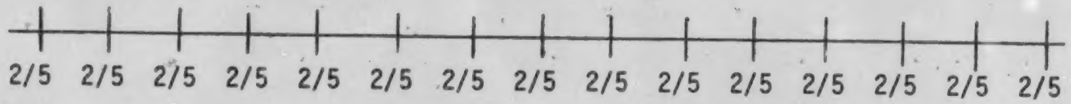
The student will be able to divide a whole number by a fraction.

Activities: What will be done, when, how much (time), by whom?

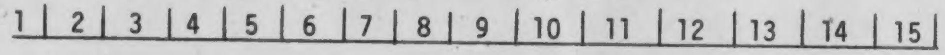
The teacher can use a ruler to demonstrate division of a whole number by a fraction, using the idea of repeated subtraction for division. For example, to show the division of 6 ÷ 2/5, first draw a line segment 6 centimeters long.



Then divide that segment into pieces 2/5 cm long.



Finally count the number of segments 2/5 centimeter long.



This means that 6 ÷ 2/5 = 15. As the student becomes more familiar with the process, the student can be introduced to the idea of inverse operations, 6 ÷ 2/5 = 6 x 5/2 = 6/1 x 5/2 = 6x5/1x2 = 30/2 = 15.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide a whole number by a fraction.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________ (**Signature** / **Title**)

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** ________
Last **First** **or**
Grade ________

Content Area General Math **Skills List No.** 31800
Sight & Sound 8.1.31.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a fraction by a fraction.

Activities: What will be done, when, how much (time), by whom?

The teacher will review the definition of division with the student. By now, the student will have the concept of division and multiplication being inverse operations mastered. The student can use the following flow chart as an excellent model.

3/4 ÷ 2x3 = 3/4 x 3/2 = 3x3/4x2 = 9/8 = 1 1/8.

The division problem is first rewritten as a multiplication problem by inverting the divisor. The student will be reminded that only the divisor is inverted. The second fractions are then multiplied together with the new numerator, 9, placed over the new denominator, 8. If this fraction can be simplified, this is now done. Thus, 9/8 is rewritten as the mixed number 1 1/8.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide a fraction by a fraction.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes ________ **No** ________ **Date** ________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: **District:** **Area**

For Dates **to**

Student Name **Last** **First** **Age or Grade**

Content Area General Math **Skills List No.** 31800
Sight & Sound 8.1.31.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a mixed number by a fraction.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out that this division is similar to all other divisions involving fractions. By now, the student will have the concept of division and multiplication being inverse operations mastered. The student can use the following flow chart as an excellent model.

3 2/3 ÷ 5/6 = 3 2/3 x 6/5 = 11/3 x 6/5 = 11x6/3x5 = 66/15 = 4 6/15 = 4 2/5.

The division problem is first rewritten as a multiplication problem by inverting the divisor. The student will be reminded that only the divisor is inverted. The mixed number is then rewritten as an improper fraction. The two fractions are multiplied, placing the new numerator over the new denominator. If the fraction can be simplified, it is done at this time. Thus 66/15 is rewritten as 4 2/5.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide mixed numbers by fractions.

Total Days Participation **out of a possible**

Criterion Attained: Yes **No** **Date**

Teacher:
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last** / **First**) **Age or Grade** ____________

Content Area General Math **Skills List No.** 32402
Sight & Sound 8.1.32.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to divide a fraction by a whole number.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will point out to the student that this division is similar to all other division involving fractions. By now the student will have the concept of division and multiplication being inverse operations mastered. The student can use the following flow chart as an excellent model.

$5 \div 3/4 = 5 \times 4/3 = 5/1 \times 4/3 = 5\times4/1\times3 = 20/3 = 6\ 2/3$

The division problem is first rewritten as a multiplication problem by inverting the divisor. The student will be reminded that only the divisor is inverted. The whole number is then rewritten as a fraction, by putting it over the denominator of 1. The two fractions are then multiplied, and the new numerator is placed over the new denominator. If the fraction can be simplified, it is done at this time. Thus 20/3 is rewritten as the mixed number, 6 2/3.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide whole numbers by fractions.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____________ (**Signature** / **Title**)

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OP 8

School: ______________ **District:** ______________ **Area** ______________
For Dates ______________ to ______________
Student Name ______________ Last ______________ First ______________ **Age or Grade** ______________

Content Area General Math **Skills List No.** 32402
Sight & Sound 8.1.32.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a mixed number by a whole number.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out that this division is similar to all other divisions involving fractions. By now, the student will have the concept of division and multiplication being inverse operations mastered. The student can use the following flow chart as an excellent model.

1 3/4 ÷ 3 = 1 3/4 ÷ 3/1 = 1 3/4 x 1/3 = 7/4 x 1/3 = 7x1/4x3 = 7/12

The division problem is first rewritten as a multiplication problem by inverting the divisor. Before this can be done, the student must first rewrite the whole number as a fraction, by placing the number in the numerator, and a 1 in the denominator. The student will be reminded that only the divisor is inverted. The mixed number is then rewritten as an improper fraction. The two fractions are then multiplied, placing the new numerator over the new denominator. If the fraction can be simplified, it is done at this time. Since 7/12 is in lowest terms, no simplification can be done with this example.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide a mixed number by a whole number.

Total Days Participation ______________ out of a possible ______________
Criterion Attained: Yes ______________ No ______________ Date ______________
Teacher: ______________ Signature ______________ Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ____________________ Last First **Age** ______ or **Grade** ______

Content Area General Math **Skills List No.** 32700

Sight & Sound 8.1.33

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to divide a mixed number by a mixed number.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out that this division is similar to all other divisions involving fractions. By now the student will have the concept of division and multiplication being inverse operations mastered. The student can use the following flow chart as an excellent model.

2 4/5 ÷ 1 3/4 = 14/5 ÷ 7/4 = 14/5 x 4/7 = 14x4/5x7 = 56/35 = 1 21/35 = 1 3/5.

The mixed numbers are first rewritten as improper fractions. The problem is then rewritten as a multiplication problem by inverting the divisor. The student will be reminded that only the divisor is inverted, the two fractions are then multiplied, with the new numerator placed over the new denominator. If the fraction can be simplified, it is done at this time. Thus 56/35 is rewritten as 1 3/5.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to divide mixed numbers by mixed numbers.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes ________ **No** ________ **Date** ________

Teacher: ______________________________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ (Last) ______________ (First) **Age or Grade** ______________

Content Area General Math **Skills List No.** Sight & Sound 8.1.34.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to define and describe a ratio.

Activities: **What will be done, when, how much (time), by whom?**

As with all basic concepts, those that deal with abstract ideas are difficult to convey. For ratio, the attached activities are a good beginning. The activities are designed to be learning by doing. The teacher should provide some direction, but should allow discovery to take place. The teacher should help the student to discover the pattern that is developing as this is a basis for ratio. The comparison sheet shows many of the ways in which ratios are discussed. The patterns and constant comments sheets are designed to show that a consistent rule is used to relate a pair of numbers.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to define and describe ratios.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________ (Signature) ______________ (Title)

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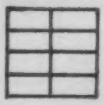
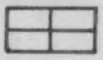
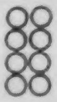
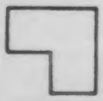
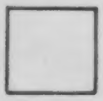
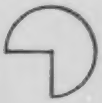
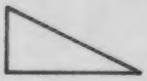
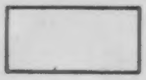
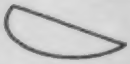
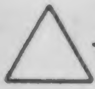
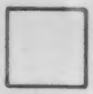
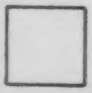
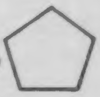
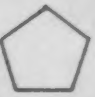
A.  to  is the same as  to

B.  to  is the same as  to

C.  to  is the same as  to

D. A to B is the same as M to _____ is the same as _____ to T

E.  to  is the same as  to  is the same as  to _____

F. 217 to 712 is the same as 564 to _____

G. 594 to 945 is the same as _____ to 954

H. 961 to 691 is the same as 861 to _____

I. 123 to 234 is the same as _____ to 789

J. ABC to XYZ is the same as DEF to _____

K. TEN to NET is the same as _____ to NAP

L. TRAP to ART is the same as DULL to _____

COMPARISON

It is often useful to compare numbers or measurements. These are some phrases that are used for making comparisons.

$40 more than
$5 less than
10 inches shorter than
3 centimetres taller than
20 pounds fatter than
$1\frac{1}{2}$ kilograms heavier than

2 sizes smaller than
6 inches larger than
2 floors higher than
4 metres lower than
23 years older than
8 times as long as

Example #1:

Write the numbers 2000 and 20 on the chalkboard. How can we compare these two numbers?

I) 2000 > 20 (greater than)
II) 2000 is 1980 more than 20 (difference)
III) 2000 has two more digits (zeros) than 20
IV) 2000 is 100 times as much as 20 (times)
V) Be receptive to other student responses.

Example #2:

Write the measurements "100 cm" and "3 metres" on the chalkboard. How can these measurements be compared?

I) 3 metres > 100 centimetres (Note that 100 > 3, but we are not comparing the numbers.)
II) 3 metres is 200 centimetres longer than 100 centimetres.
III) 3 metres is a shorter way of writing 300 centimetres.
IV) 3 metres is 3 times as long as 100 centimetres.
V) Any other student answers?

PATTERNS FOR INTRODUCING RATIO

There are many patterns all around us. Some are difficult to see or understand. Other patterns seem obvious and are taken for granted.

Show the students various patterns. By making some easier, some harder, you can set the pace, reinforce responses and challenge the class. Have students continue the patterns.

a) 1, 2, 3, . . .

b) 1, 2, 4, 8, . . .

c) $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \ldots$

d) 1, 4, 9, 16, . . .

e) 1, 1, 2, 3, 5, 8, . . .

Continue the patterns by writing the next two pairs of numbers.

a)	b)	c)	d)	e)
(1, 2)	(1, 2)	(1, 1)	(0, 5)	$(\frac{1}{2}, 2)$
(2, 3)	(2, 4)	(2, 4)	(1, 4)	$(\frac{1}{3}, 3)$
(3, 4)	(3, 6)	(3, 9)	(2, 3)	$(\frac{1}{4}, 4)$
(4, 5)	(4, 8)	(4, 16)	(3, 2)	$(\frac{1}{5}, 5)$
______	______	______	______	______
______	______	______	______	______

Each set of number pairs is related by a constant (same) sum, difference, product, or quotient. Discuss these relationships carefully with the students.

Students should identify the pattern and write three more number pairs in each problem.

a,	b)	c)	d)
(10,5)	(3, 4)	(70, 10)	(2, 5)
(8, 3)	$(\frac{1}{2}, 24)$	(28, 4)	$(\frac{1}{4}, 6\frac{3}{4})$
(16, 11)	(12, 1)	(21, 3)	(4, 3)
______	______	______	______
______	______	______	______
______	______	______	______

Constant Comments

Look at the following sets of number pairs. The pairs in each set are related by a constant (same) sum (+), constant difference (-), constant product (x), or constant quotient (÷). How are the pairs related? Write three more number pairs which fit the pattern.

Example: The pattern is

(10, 2) 10÷2=5
(50,10) 50÷10=5
(25, 5) 25÷5=5
40,8
100,20
37,7
5 is the constant quotient

① (6, 6)
(36, 1)
(2, 18)
____
____
____

② (12, 0)
(2, 10)
(8, 4)
____
____
____

③ (18, 9)
(14, 7)
(6, 3)
____
____
____

④ (2, 2)
(7, 7)
$(\frac{1}{4}, \frac{1}{4})$
____
____
____

⑤ (6, 4)
(12, 2)
$(\frac{1}{2}, 48)$
____
____
____

⑥ (8, 2)
$(\frac{1}{2}, 9\frac{1}{2})$
(5, 5)
____
____
____

⑦ (15, 3)
(20, 8)
(13, 1)
____
____
____

⑧ (12, 2)
(18, 3)
(6, 1)
____
____
____

⑨ (4, 1)
(20, 5)
(12, 3)
____
____
____

⑩ (15, 65)
(79, 1)
(3, 77)
____
____
____

⑪ (3, 11)
(6, 14)
(4, 12)
____
____
____

⑫ (2, 3)
(6, 9)
(16, 24)
____
____
____

⑬ (25, 65)
(79, 11)
(13, 77)
____
____
____

⑭ (17, 34)
(48, 65)
(3, 20)
____
____
____

⑮ $(\frac{1}{2}, 96)$
(6, 8)
(2, 24)
____
____
____

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ____________

For Dates ____________ **to** ______________

Student Name ________________________ **Age** ________
Last **First** **or**
Grade ________

Content Area General Math **Skills List No.** Sight & Sound 8.1.34.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to write a ratio from a given set of information.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activities to help the student become familiar with the process of writing ratios. The Ratio by Picture activity will start the student in thinking about ratios. The student will learn to write a ratio in its three basic forms. The teacher will be encouraged to have the student discover the facts about writing ratios. After the student has become familiar with the basics of ratios, the All About You activity is a good one to use in this regard.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to write ratios from given sets of materials.

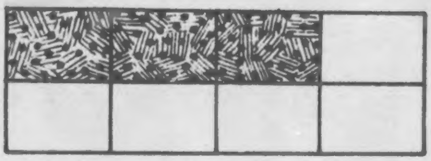
Total Days Participation ____________ **out of a possible** ______________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

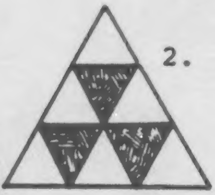
SHADY RATIOS

1. A) The ratio of the number of shaded rectangles to the number of unshaded rectangles is 3 to 5. This ratio may be written 3 to 5, 3:5, or $\frac{3}{5}$



B) The ratio of shaded rectangles to small rectangles is 3 to 8, 3:8, or $\frac{3}{8}$.

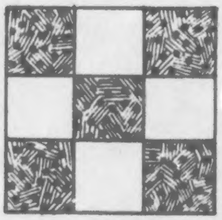
C) The ratio of small rectangles to unshaded rectangles is 8 to 5, 8:5, or $\frac{8}{5}$.



2. Use the figure to describe a ratio of:
A) 3 to 6--3 shaded triangles to ____________.
B) 6:9--____________ to small triangles.
C) $\frac{9}{3}$--Small triangles to ____________.

Can you find a ratio of 9:1?

3. Use this figure to describe a ratio of:
A) 5 to 4 ____________________
B) $\frac{4}{9}$ ____________________
C) 9:5 ____________________
D) 1 to 9 ____________________



The ratio is all small triangles to one large triangle.

SHADY RATIOS (CONTINUED)

4. For the figure on the right write and describe at least 3 ratios.

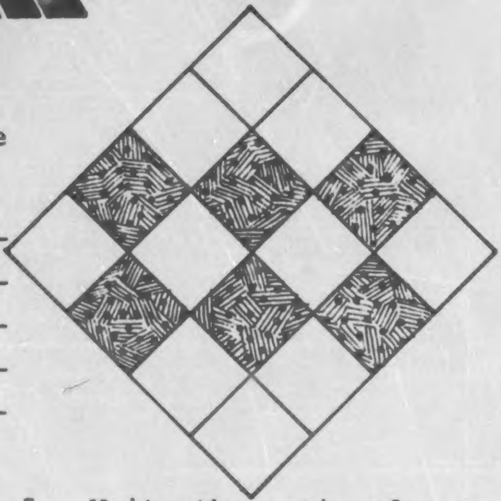
A) ____________________

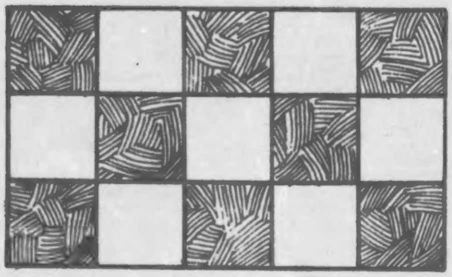
B) ____________________

C) ____________________

D) ____________________

E) ____________________





5. Write the ratio of:

A) Number of shaded squares to number of unshaded squares.

____

B) Number of shaded squares to number of small squares.

____

C) Number of small squares to number of unshaded squares.

____

6. Write the ratio of:

A) Shaded rectangles to unshaded rectangles.

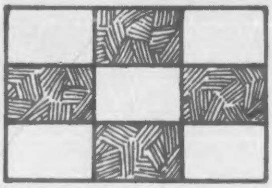
____

B) Small rectangles to shaded rectangles.

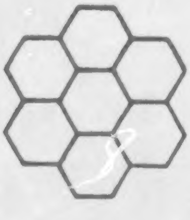
____

C) Unshaded rectangles to shaded rectangles.

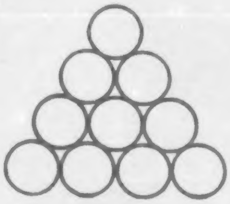
____



7. Shade to show a ratio of 6 shaded hexagons to 1 unshaded hexagon, 6:1. In how many different ways can this be done?

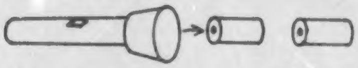


8. Shade the circles to show a ratio of 7 to 10. In how many different ways can this be done?

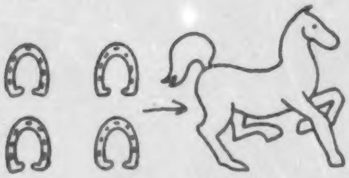


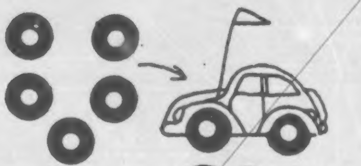
RATIOS BY PICTURE

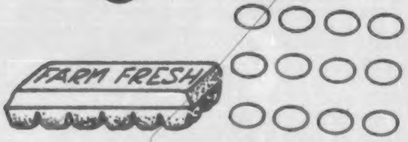
WRITE THE RATIO THAT IS SUGGESTED BY EACH OF THESE PICTURES.

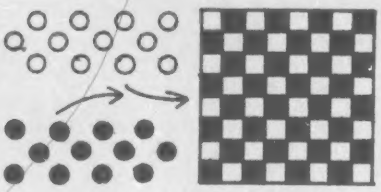
A) 

___ FLASHLIGHT FOR EVERY ___ BATTERIES OR 1:2

B)  ___ HORSESHOES FOR EVERY ___ HORSE OR ___:___

C)  ___ TIRES FOR EVERY ___ CAR OR ___:___

D)  ___ EGG CARTON FOR EVERY ___ EGGS OR ___:___

E) 

___ CHECKERS FOR EVERY ___ SQUARES ON A CHECKERBOARD OR ___:___

DRAW A DIAGRAM AND WRITE A RATIO FOR EACH OF THESE STATEMENTS.

F) 1 SINGLE DIP ICE CREAM CONE FOR EVERY 15¢

G) 6 CANDY BARS FOR 79¢

H) 3 TENNIS BALLS FOR 1 CAN

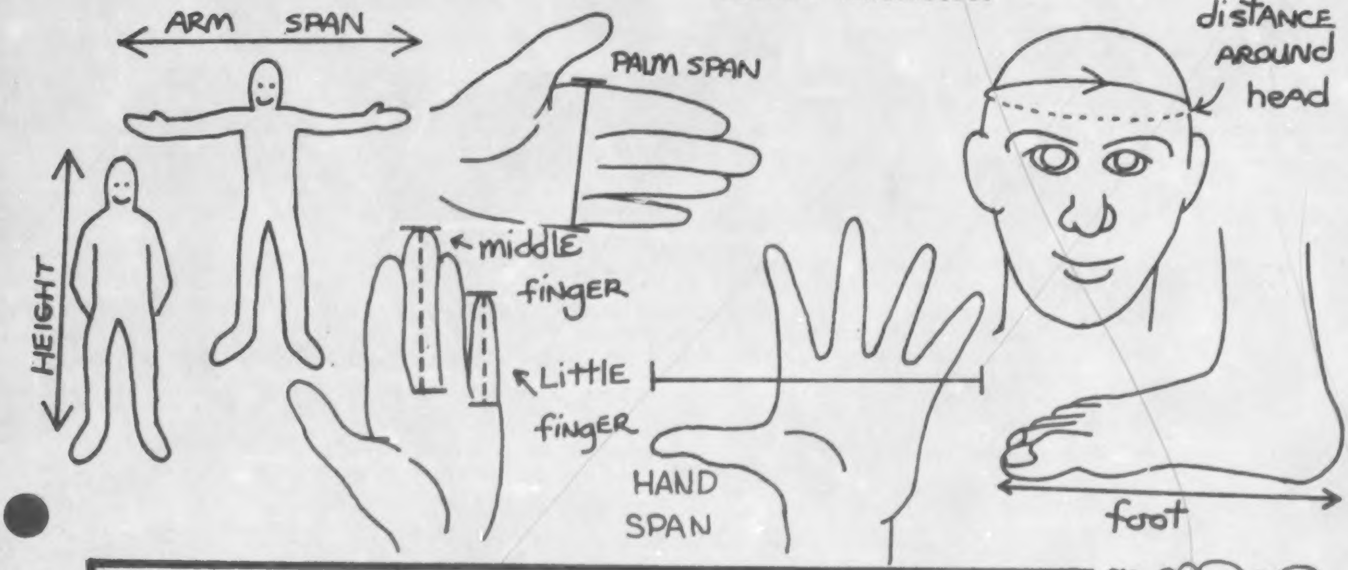
I) 25¢ FOR EVERY 3 PACKS OF GUM

J) 5 BATS FOR EVERY 9 BASEBALL PLAYERS

ALL ABOUT YOU

Materials Needed: 2 or 3 students; metre stick; string or metric tape measure.

For each student measure and record these lengths to the nearest centimetre.


ARM SPAN
HEIGHT
PALM SPAN
middle finger
little finger
HAND SPAN
distance AROUND head
foot

NAME →				AVERAGE
height (NO SHOES)				
ARM SPAN				
hand SPAN				
PALM SPAN				
Little finger				
middle finger				
head				
foot				

Add the three numbers and divide by 3.

Use your chart to find the ratios of these lengths.

NAME →				AVERAGE
ARM SPAN to height				
foot to height				
LITTLE FINGER TO MIDDLE FINGER				
HAND SPAN TO MIDDLE FINGER				
PALM SPAN TO HANDSPAN				
head to foot				

Use the numbers in the average column to find these ratios.

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________________ **Age** ________
Last First **or**
Grade ________

Content Area General Math **Skills List No.**
Sight & Sound 8.1.34.3

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The students will be able to use the ratios derived from sets of information.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the activities attached to help the student discover the way ratios are used. Reckoning Ratios will reinforce the writing of ratios. Shady Numeral Ratios helps in using ratios to determine rates. Rows and Patterns can be used to help the student determine ratios from patterns. The MLM activity is a fun one to bring together several concepts dealing with ratios. Whats In A Ratio is good to help the student in interpreting ratio statements. Ratio Of Ages is good for the teacher and student to use ratio to compare a change in age. All of these activities will help the student become more confident in using the various aspects of ratios.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

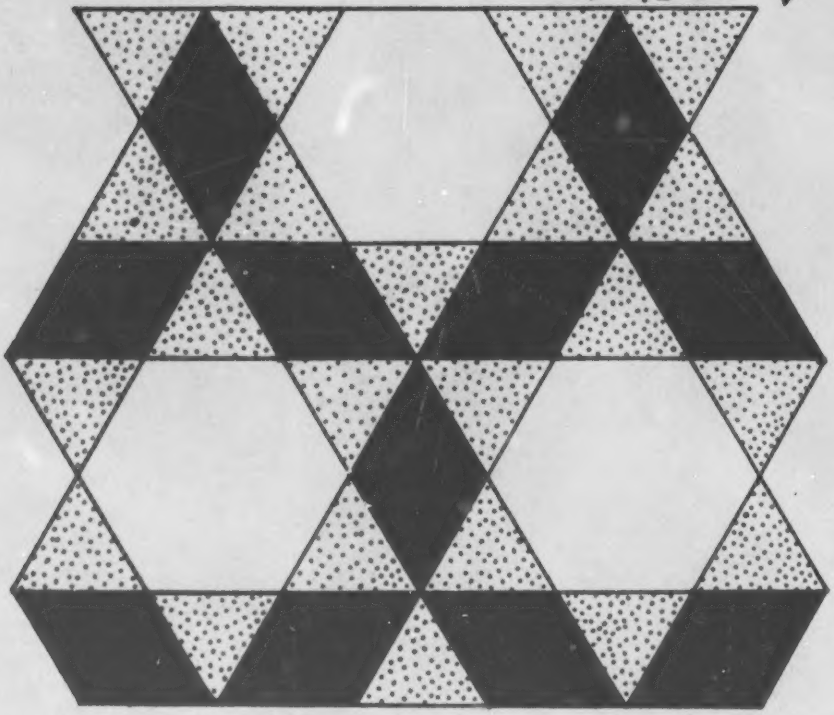
Given a teacher made test, the student will be able to use ratios derived from sets of information.

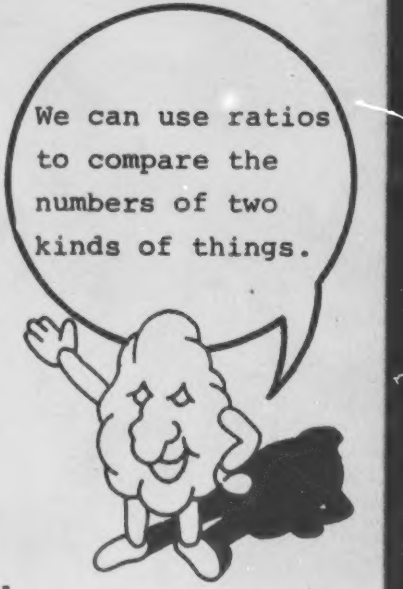
Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

RECKONING RATIOS




We can use ratios to compare the numbers of two kinds of things.

The ratio of small triangles to rhombuses is 22 to 11.

We can write this as 22:11.

Determine these ratios:

1) Rhombuses to Small Triangles

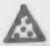
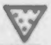
_____ to _____ or _____:_____

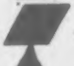
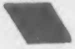
2) Hexagons to Rhombuses

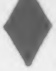
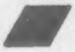
_____ to _____ or _____:_____

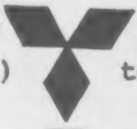
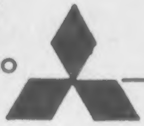
3) Small Triangles to Hexagons

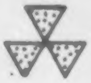
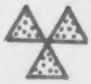
_____ to _____ or _____:_____

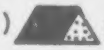
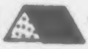
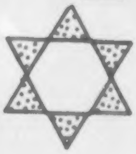
4)  to  ___ to ___ or ___:___

5)  to  ___ to ___ or ___:___

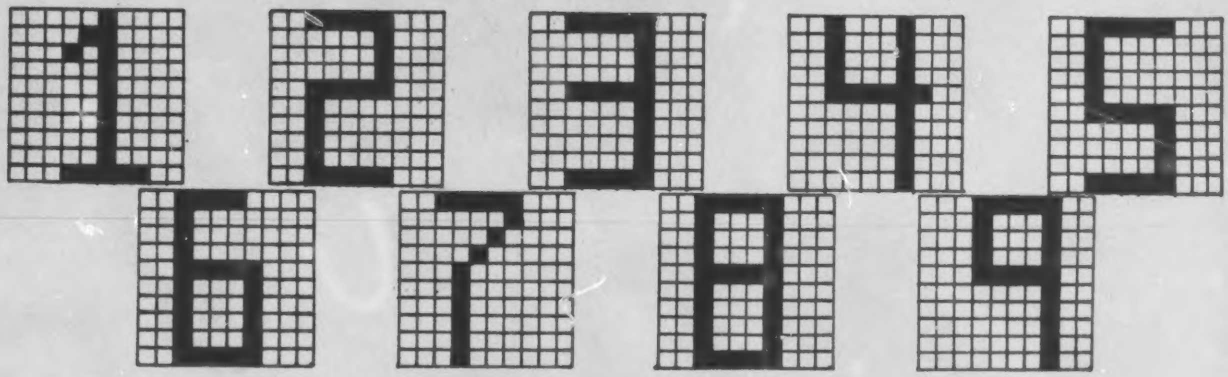
6)  to  ___ to ___ or ___:___

7)  to  ___ to ___ or ___:___

8)  to  ___ to ___ or ___:___

9)  and  to  ___ to ___ or ___:___

SHADY NUMERAL RATIOS



THESE GRIDS EACH HAVE 100 SMALL SQUARES.

WITHOUT COUNTING, GUESS:

A) WHICH NUMERAL SHADES THE MOST SQUARES? ______

B) WHICH NUMERAL SHADES THE LEAST SQUARES? ______

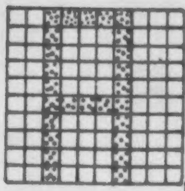
C) WHICH 3 NUMERALS SHADE THE SAME NUMBER OF SQUARES. ______

FOR EACH NUMERAL COUNT THE SHADED SQUARES AND WRITE THE RATIO OF THE NUMBER OF SHADED SQUARES TO THE TOTAL NUMBER OF SQUARES.

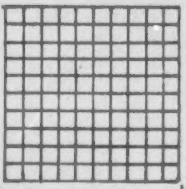
1 ______ 2 ______ 3 ______ 4 ______ 5 ______

6 ______ 7 ______ 8 ______ 9 ______

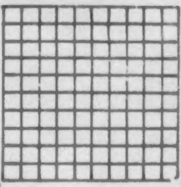
IN THESE GRIDS SHADE THE VOWELS OF THE ALPHABET.
THEN WRITE THE RATIO OF SHADED SQUARES TO UNSHADED SQUARES.



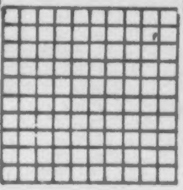
___ : ___



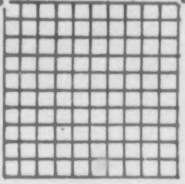
___ : ___



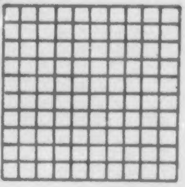
___ : ___



___ : ___



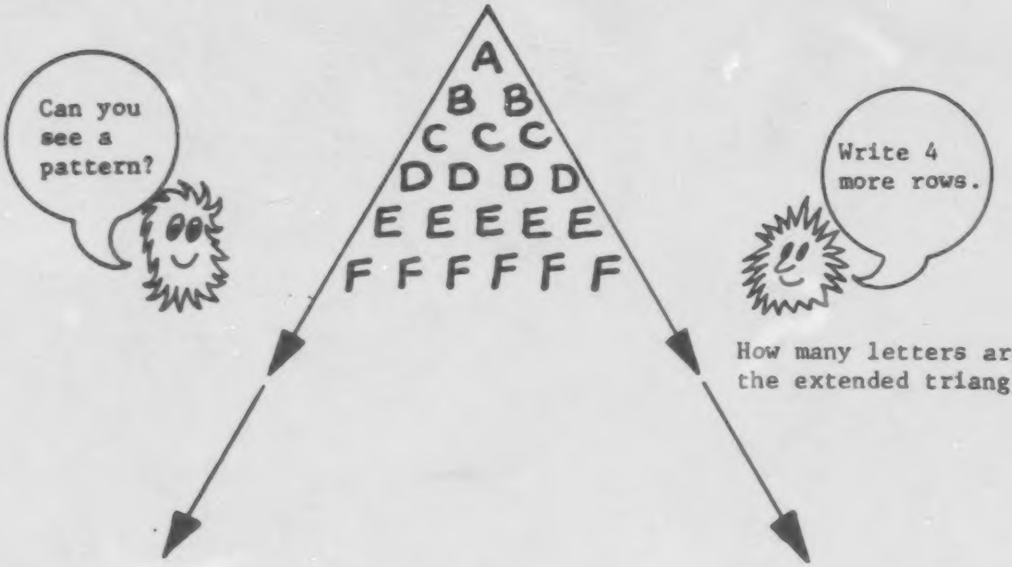
___ : ___



___ : ___

WHICH LETTER OF THE ALPHABET
DO YOU THINK WOULD SHADE
THE MOST SQUARES?

ROWS AND RATIOS


Can you see a pattern?
A
B B
C C C
D D D D
E E E E E
F F F F F F
Write 4 more rows.

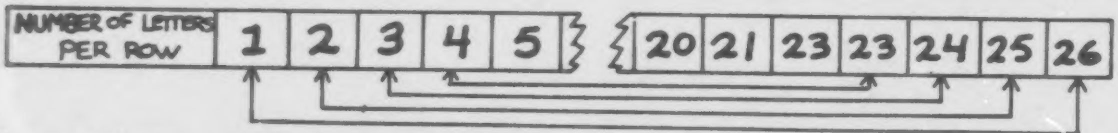
How many letters are in the extended triangle? ______

1. Write the ratio of the number of:

a) A's to B's ____ b) E's to D's ____ c) C's to F's ____ d) J's to G's ____

e) H's to I's ____ f) C's to all the letters ____ g) letters in the top 5 rows to letters in the bottom 5 rows ____ h) letters in the top row to letters in the bottom row. ____

2. a) Could the triangle be extended past 10 rows? ____
   b) What letter would be in the 24th row? ____
   c) How many of this letter would be in the 24th row? ____
   d) How many rows would be in the completed triangle? ____
   e) How many total letters would be in the completed triangle? Study the chart below. You might see a way to do it without adding each row. The total is ____.



NUMBER OF LETTERS PER ROW	1	2	3	4	5	20	21	23	23	24	25	26

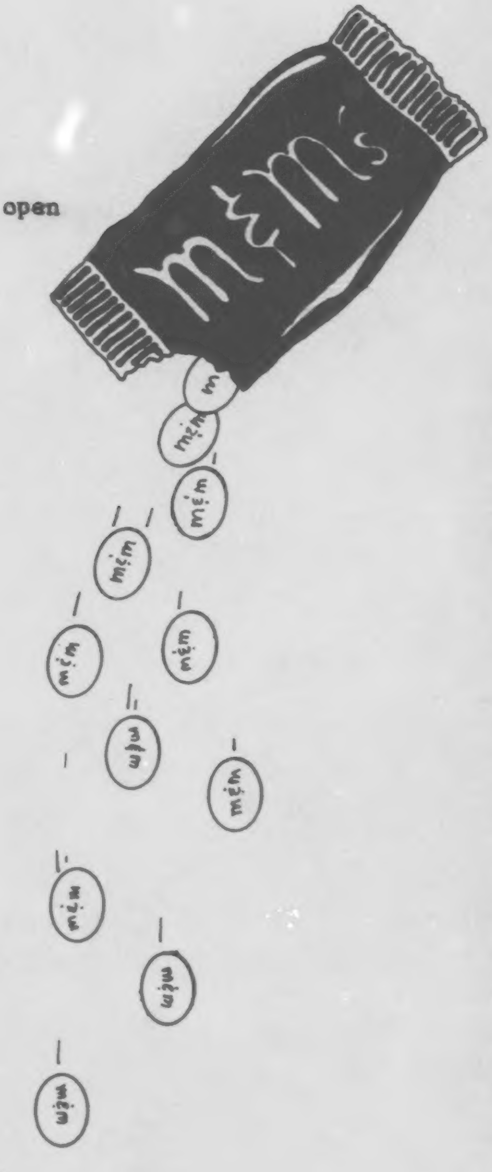
3. If you had the completed triangle of letters write the ratio of the number of:
   a) different letters to total letters. ________
   b) letters in the top 3 rows to letters in the bottom 3 rows. ________
   c) letters in the 5th row to letters in the 15th row. ________

Get a package of M & M's from your teacher. Carefully open the package and put the candy on your table.

How many M & M's are in your package? __________

DON'T EAT ANY YET

How many different colors do you have? __________



COLOR	NUMBER OF M & M's
Brown (B)	
Tan (T)	
Red (R)	
Orange (O)	
Yellow (Y)	
Green (G)	

Use your numbers and write these ratios in fraction notation.

a) G to O _____

b) R to B _____

c) T to Y _____

d) Y to O _____

e) B to G _____

f) R to T _____

g) (R + Y) to total _____

h) (G + R + B) to (Y + O + T) _____

Write these ratios in fraction notation.

1) a) T to total _____
   b) B to total _____
   c) (T + B) to total _____

2) d) O to B _____
   e) R to Y _____
   f) (O + R) to (B + Y) _____

3) g) G to R _____
   h) G to Y _____
   i) G to (R + Y) _____

* NOW YOU CAN EAT THE CANDY

WHAT'S IN A RATIO?

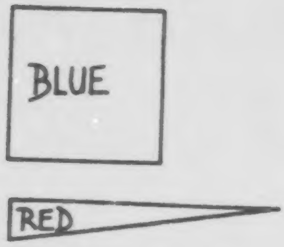
1) The ratio of the length of Lucy's hair to the length of Sharon's hair is 3 to 1.

A) __________ has the longer hair.

B) Lucy's hair is _____ times longer than Sharon's hair.

C) Sharon's hair is very short. T or F? _____

D) The ratio of the length of Sharon's hair to Lucy's hair is __________.



2) The ratio of the area of the red triangle to the area of the blue square is 1 to 2.

A) The color of the shape with the greater area is ________.

B) The area of the red triangle is _______ square centimetres.

C) If the area of the red triangle is 10 square centimetres then the area of the blue square is ________ square centimetres.

D) The ratio of the area of the blue square to the area of the red triangle is ________.

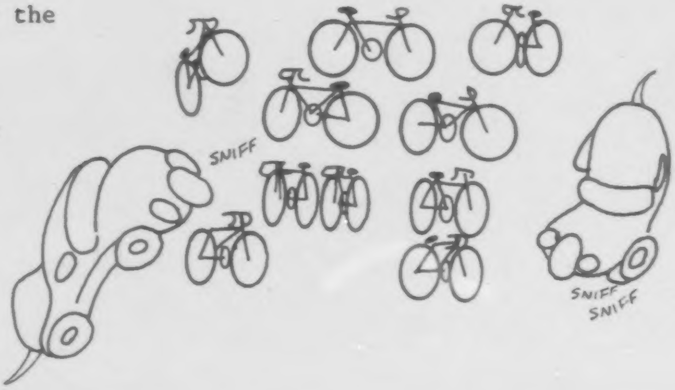
E) The _______________ has the greater perimeter.

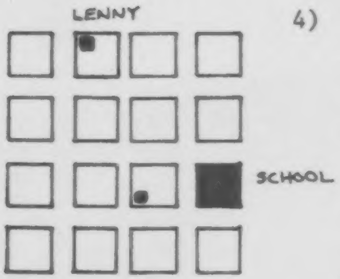
3) In this picture the ratio of the the number of bikes to the number of cars is 10 to 2.

A) There are ________ times as many bikes as cars.

B) A car is ________ times longer than a bike.

C) If there were 150 bikes there would be ________ cars. (Assume the ratio is the same as in the picture.





4) The ratio of the distance Lenny Lightfoot lives from school to the distance Sally Speedball lives from school is 4 to 1.

A) _______________ lives farther from school.

B) If they bike to school at the same speed, what can you say about the time each takes? ____________________

C) If they bike to school in the same amount of time what can you say about their speeds? ____________________

D) The ratio of Sally's height to Lenny's height is _____.

RATIO OF AGES

Part I:

There are two brothers; Jon is 13 years old, Ron is only 1 year old. As the two grow older the ratio of their ages will change. Neatly organize a chart so the students can compare the ages. Do a few lines and suggest that they continue the pattern until Jon is 24 years old.

Jon	Ron	Ratio of Ages	Times As Old As
13	1	13:1	Jon is 13 times as old as Ron
14	2	14:2	Jon is 7 times as old as Ron
15	3	15:3	Jon is 5 times as old as Ron
16	4	16:4	Jon is 4 times as old as Ron
.	.	.	.
.	.	.	.
.	.	.	.
24	12	24:12	Jon is 2 times as old as Ron

Ask the students if they see any patterns in the chart.

a) How old will Jon and Ron be when Jon is 2 times as old as Ron?

b) When will Jon be $1\frac{1}{2}$ times as old as Ron?

c) If Jon is 100 years old, then he is _____ times as old as Ron.

d) If Jon is 500 years old, then he is _____ times as old as Ron.

e) When will Jon be 1 times older than Ron?

If students fail to see that the ratio of their ages approaches but doesn't equal 1 another example may be needed. Personalize the activity by selecting a student with a younger brother or sister.

RATIO OF AGES (CONTINUED)

Part II:

The ratio of ages pattern can be investigated by working backwards in age. Suppose Lynn is 12 years old and Mark is 8 years old.

Lynn	Mark	Ratio of Ages	Times As Old As
12	8	12:8	$1\frac{1}{2}$ times as old as
11	7	11:7	
10	6	10:6	
9	5	9:5	
8	4	8:4	
7	3	7:3	
6	2	6:2	
5	1	5:1	
.	.		
.	.		
.	.		
4	0	nonsense	

Extend the table using months. If calculations become too burdensome use calculators.

60	12	60:12	5 times as old as
59	11	59:11	
58	10	58:10	
57	9	57:9	
56	8	56:8	7 times as old as
55	7	55:7	
54	6	54:6	9 times as old as
53	5	53:5	
52	4	52:4	13 times as old as
51	3	51:3	17 times as old as
50	2	50:2	25 times as old as
49	1	49:1	49 times as old as

Change Lynn's and Mark's ages to days and continue the countdown. When will Lynn be 100 times as old as Mark? . . . 1000 times as old as Mark? . . . 10,000 times? 1 million times? (Try hours and minutes.)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ District: ______________________ Area ____________

For Dates ______________ to ________________

Student Name ______________________________________ Age ____________
Last First or
Grade ____________

Content Area General Math Skills List No. Sight & Sound 8.1.34.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to give a definition of a proportion, and identify basic proportions.

Activities: What will be done, when, how much (time), by whom?

The teacher will show the student the basic definition of a proportion through the attached activities. She will help the student discover that a proportion is an equation involving two equivalent ratios. The activities will lead the student into discovering the basic information about proportion. Ratios By Picture, Ratios and Cubes, Animal Ratio, Animal Ages, and Ratios In Your School, all deal with equivalent ratios. As the student goes through these activities, the teacher can point out to the student that these equivalent fractions that are formed are called proportions. I Like Your Form helps the student recognize equal proportions written in different forms. One Man One Vote is an activity that allows the student to see the actual use of a proportion.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to write proportions based on the definition of a proportion.

Total Days Participation ____________ out of a possible ________________

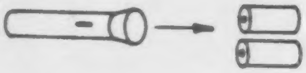
Criterion Attained: Yes ____________ No ____________ Date ______________

Teacher: ____
Signature Title

RATIOS BY PICTURE

Write the equivalent ratios suggested by each of these pictures.

Ⓐ



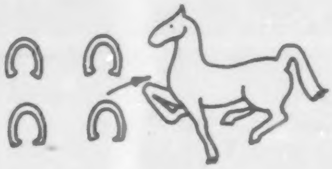
______ flashlights for every 4 batteries

______ flashlights for every 6 batteries

______ flashlights for every 8 batteries

______ flashlights for every 20 batteries

Ⓑ



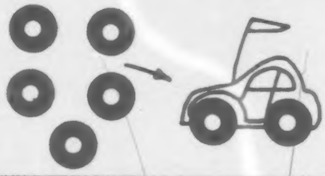
8 horseshoes for every ______ horses

12 horseshoes for every ______ horses

16 horseshoes for every ______ horses

28 horseshoes for every ______ horses

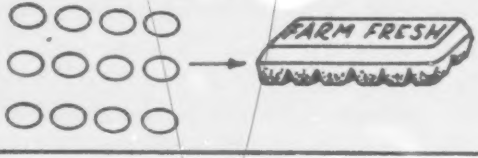
Ⓒ



______ tires for every 6 cars

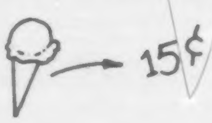
______ tires for every 50 cars

Ⓓ



______ egg cartons for every 144 eggs

Ⓔ



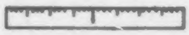
______ ice cream cones for every 30¢

______ ice cream cones for every 45¢

______ ice cream cones for every 60¢

______ ice cream cones for every 90¢

Ⓕ



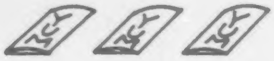
24 inches → 2 feet

______ inches for every 1 foot

______ inches for every 3 feet

______ inches for every 5 feet

Ⓖ



25¢ for 3

50¢ for every ______ candy bars

75¢ for every ______ candy bars

$1.25 for every ______ candy bars

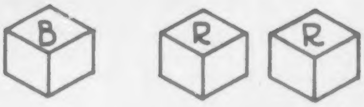
$2.00 for every ______ candy bars

RATIOS AND CUBES 1

Materials: 24 blue cubes and 24 red cubes

Activity:

B means blue cube.
R means red cube.



A. Use 1 B and 2 R.

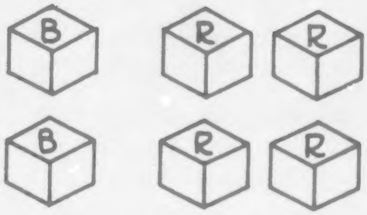
1. The ratio of B to R is ___:___.

Use another group of 1 B and 2 R.

2. The ratio of B to R is now 2 :___.

Use another group of 1 B and 2 R.

3. The ratio of B to R is now ___: 6 .



4. If you continued using groups of 1 B and 2 R, write the ratio of B to R that you would get.

6 :___ , ___ : 22 , 10 :___ , ___: 18

Each ratio was formed using groups of 1 B and 2 R. The ratios are equivalent ratios.

B. Use 4 R and 3 B.

1. The ratio of R to B is ___:___.

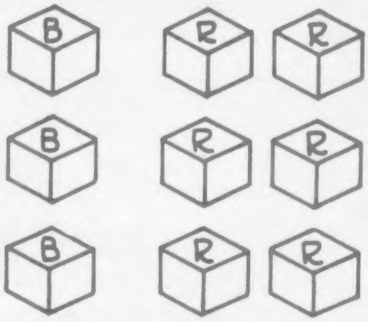
Use another group of 4 R and 3 B.

2. The ratio of R to B now is ___:___.

Use another group.

3. The ratio of R to B is now ___:___.
4. Continue using groups of 4 R and 3 B.

Write the ratio of R to B.



16 :___ , ___: 15 , ___: 24 , 24 :___

Each ratio was formed using groups of 3 R and 4 B. The ratios are equivalent ratios.

C. Use these groups and write equivalent ratios.

① 3:5, 9 :___ , ___: 30

② 1:4, 5 :___ , ___: 12

③ 8:3, ___: 15 , 32 :___

RATIOS AND CUBES 2

Materials: 24 blue cubes and 24 red cubes

B means blue cube.
R means red cube.

Activity:

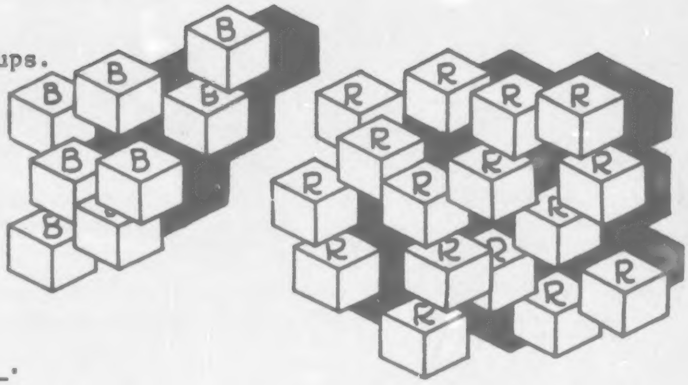
A. Use 8 B and 16 R.

1. The ratio of B to R is ___:___.
Separate each color into two equal groups.

2. Using one group of each color,
the ratio of B to R is ___: 8 .
Separate each group into two smaller groups.

3. Using one smaller group of each
color, the ratio of B to R is 2 :___.
Separate again.

4. Using one group of each color,
the simplest ratio of B to R is ___:___.
The ratios above are equivalent ratios.
Each can be formed using ___B and ___R.



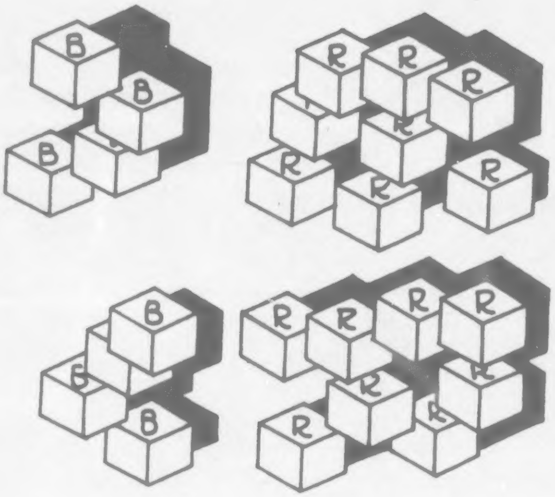
B. Use 24 R and 18 B.

1. The ratio of R to B is ___:___.
Separate each color into three equal groups.

2. Using one group of each color,
the ratio of R to B is ___:___.
Separate each group into two smaller groups.

3. Using one smaller group of each
color, the ratio of R to B is ___:___.
Separate again.

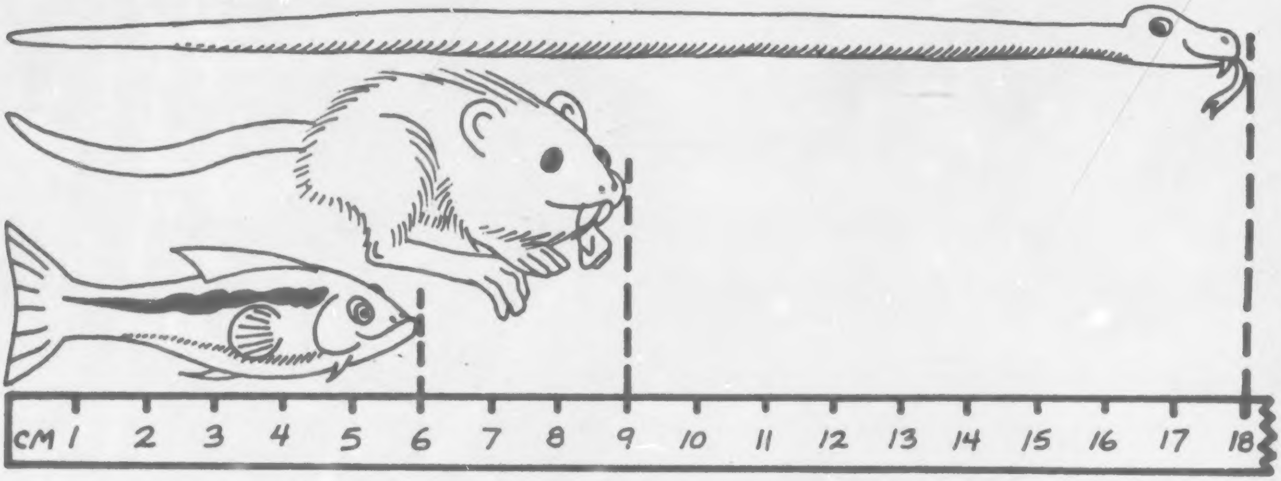
4. Using one group of each color, the
simplest ratio of R to B is ___:___.
The ratios above are equivalent ratios.
Each can be formed using ___ R and ___ B.



C. Find the simplest ratio that could be used to form these equivalent ratios.

1. 8:4
2. 18:30
3. 9:27
4. 25:40
5. 30:100
6. 180:150

ANIMAL RATIO



1. a) How long is the fish? __________
   b) How long is the snake? __________
   c) Write a ratio to compare the length of the snake to the length of the fish _____:_____.
   d) How many fish placed end-to-end would be needed to have the same length as the snake? ________________
   e) The snake is _____ times as long as the fish.
   f) Find two lengths on the ruler, so the longer length is 3 times the shorter length. _____ and _____
   g) What are the two shortest lengths (whole number of centimetres) on the ruler, so that the longer is 3 times the shorter? _____ and _____
   h) Write the ratios from (e) _____:_____, (f) _____:_____ and (g) _____:_____. These ratios are called equivalent ratios. Can you see why?
   i) Write another ratio equivalent to the ratios in (h) _____:_____.

2. a) Write a ratio to compare the lengths of the gerbil to the snake _____:_____.
   b) The gerbil is _____ times as long as the snake.
   c) Find two lengths on the ruler, so the shorter length is $\frac{1}{2}$ of the longer length and write their ratio _____:_____.
   d) Find the two shortest lengths, so the shorter length is $\frac{1}{2}$ of the longer length. _____ and _____
   e) Write the ratios from (a) _____:_____, (c) _____:_____, (d) _____:_____.

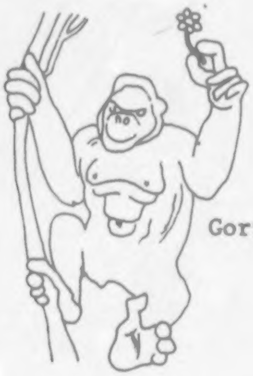
      These ratios are equivalent ratios because the shorter length is $\frac{1}{2}$ of of the longer length in each case.
   f) Write another ratio equivalent to the ratios in (e) _____:_____.

3. a) Write a ratio to compare the length of the gerbil to the length of the fish. _____:_____
   b) The gerbil is _____ times as long as the fish.
   c) Find two lengths, so the longer is 1 1/2 times the shorter. _____ and _____
   d) Find the two shortest lengths, so the longer is 1 1/2 times the shorter. _____ and _____
   e) Write the ratios from (a) _____:_____, (c) _____:_____, (d) _____:_____. These ratios are equivalent ratios because the longer is 1 1/2 times the shorter.
   f) Write another ratio equivalent to the ratios in (e) _____:_____.

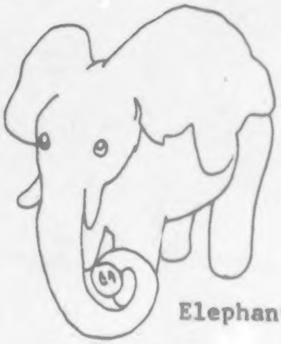
ANIMAL AGES

Average Life Span (in years)

Buffalo - 20


Gorilla - 25

Rabbit - 5


Elephant - 50

Cat - 15

Chimpanzee - 30

Write a ratio comparing the average life spans of these animals. Then simplify each ratio.

a) Buffalo to Rabbit _____:_____ = _____:_____

b) Gorilla to Elephant _____:_____ = _____:_____

c) Chimpanzee to Cat _____:_____ = _____:_____

d) Rabbit to Buffalo _____:_____ = _____:_____

e) Chimpanzee to Elephant _____:_____ = _____:_____

f) The ratio of the average life span of the Buffalo to Man is 1:3. About how many years can Man expect to live? __________

g) The ratio of the average life span of a Gorilla to a Gerbil is 5:1. About how long can a Gerbil be expected to live? __________

h) The ratio of the average life span of a Buffalo to a Guinea Pig is 5:1. About how long can a Guinea Pig be expected to live? __________

i) The ratio of the average life span of a Cat to a Dog is 1:1. What is the expected life span of a Dog? __________

j) The ratio of the average life spans of a Bat, a Cat, and a Grizzly Bear is 1:3:6. About how long is the average life span of a Bat and a Grizzly Bear? _____ _____

RATIOS IN YOUR SCHOOL

Fill in this chart. Guess first then get the actual numbers from your teacher.

PEOPLE IN YOUR SCHOOL	GUESSES			ACTUAL NUMBER		
	NUMBER OF FEMALES	NUMBER OF MALES	TOTAL	NUMBER OF FEMALES	NUMBER OF MALES	TOTAL
COUNSELORS						
SCHOOL NURSES						
YOUR CLASS						
ALL STUDENTS						
TEACHERS						
PRINCIPALS						
COOKS						
CUSTODIANS						
SECRETARIES						
TOTALS						

I. Use the chart of actual numbers to find these ratios. If possible write each ratio in simplest form.

The ratio of:

a) Males to females in your class is ___ to ___ or ___:___.

b) Students in your class to all students is ___ to ___ or ___:___.

c) Principals to all students is ___ to ___ or ___:___.

d) Cooks to everyone in school is ___ to ___ or ___:___.

e) Female teachers to male teachers is ___ to ___ or ___:___.

f) Female teachers to total teachers is ___ to ___ or ___:___.

g) Male cooks to female cooks is ___ to ___ or ___:___.

h) Male principals to female principals is ___ to ___ or ___:___.

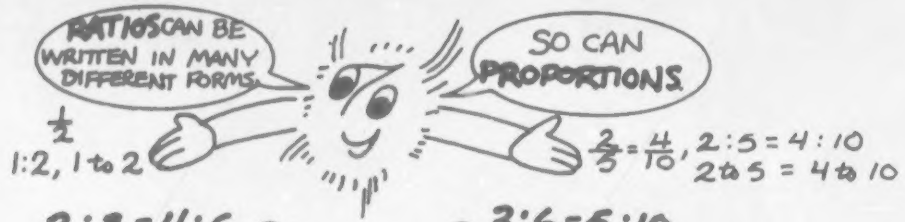
i) Female secretaries to male secretaries is ___ to ___ or ___:___.

j) All teachers to all students is ___ to ___ or ___:___.

Pupil-Teacher Ratio is the closest whole number of students for each teacher. For example, in a school with 224 students and 10 teachers the pupil-teacher ratio is 224 to 10 or about 22 to 1.

k) Find the pupil-teacher ratio for your school. ___:___

l) Find the pupil-counselor ratio for your school. ___:___


RATIOS CAN BE WRITTEN IN MANY DIFFERENT FORMS.
$\frac{1}{2}$
1:2, 1 to 2
SO CAN PROPORTIONS.
$\frac{2}{5}=\frac{4}{10}$, 2:5 = 4:10
2 to 5 = 4 to 10

2:3=4:6 ●

● 3:6=5:10

1 to 3 = 2 to 6 ●

● 3 to 5 = 6 to 10

3 to 6 = 1 to 2 ●

● 3:6=1:2

I LIKE YOUR FORM

Use line segments to connect the dots that name the same proportion.

The result is startling!

$\frac{3}{5}=\frac{6}{10}$ ●

● $\frac{1}{3}=\frac{2}{6}$

$\frac{3}{6}=\frac{5}{10}$ ●

● 2 to 3 = 4 to 6

$\frac{2}{3}=\frac{4}{6}$ ●

● 3 to 6 = 5 to 10

1 to 3 = 2 to 6 ●

● 3:5=6:10

●
$\frac{3}{6}=\frac{1}{2}$

Write the other forms for these proportions.

$\frac{4}{5}=\frac{12}{15}$		
	2:7=8:28	
		12 to 2 = 6 to 1

Use the four numbers 2, 6, 9, 27 to write a proportion. Then write the other forms.

________ ________ ________

Did you get the same proportion as your neighbor? Compare and see.

Can you make another proportion from the four numbers?

ONE MAN ONE VOTE

From a world almanac find

(a) the number of senators in Congress ____________

(b) the number of representatives in Congress ____________

(c) the ratio of senators to representatives is ____________:____________ or about ____________:____________.

How many senators does your state have in Congress? ____________

How many representatives does your state have in Congress? ____________

Write the ratio of senators to representatives in your state ________:________.

Are the two ratios equivalent?

In the 94th Congress the House of Representatives has ________ Democrats and ________ Republicans. The ratio of Democrats to Republicans is about ______:______

What is the ratio of Democrats to Republicans in the House of Representatives in your state? ________:________

There are 16 women in the 94th Congress. All serve in the House of Representatives. The ratio of women to men is ________:________, or about 1 woman for every ______ men.

The number of representatives each state has is based on the population of the state. Oregon has 4 representatives out of 435 or about 1:100. If the population of the United States is about 200,000,000 people, approximate the population of Oregon. ______________________

Check in the almanac to see how close your approximation is.

Use 2,000,000 people as the population of Oregon and approximate the population of these states.

State	Number of Representatives	Approximate Population	Actual Population
Tennessee			
Maine			
Massachusetts			
Nevada			
California			

On a map of the United States color the states according to the number of representatives.

1 - 5	Red	21 - 25	Blue
6 - 10	Orange	26 - 30	Purple
11 - 15	Yellow	31 - 35	Violet
16 - 20	Green	36 - more	Black

Can you see an area of the United States that has a large population? a small population?

ONE MAN ONE VOTE (continued)

100
0
200
miles
100
0
200
miles
100
0
200
miles

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ **Last** ______________ **First** ______________ **Age or Grade** ______________

Content Area General Math **Skills List No.** Sight & Sound 8.1.34.5

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to determine if a proportion is a true statement.

Activities: What will be done, when, how much (time), by whom?

The teacher will remind the student that a proportion is a pair of equivalent fractions. If it is a true statement, both fractions will be identical when written in lowest terms. This gives the student an excellent way to determine if a proportion is true. We Must Work Together (see attached sheet) is an excellent exercise to develop for the student another method of determining true proportions. The activity will help the student discover that in true proportions, the product of the mean equals the product of the extreme.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify true proportions.

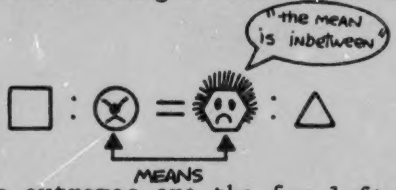
Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

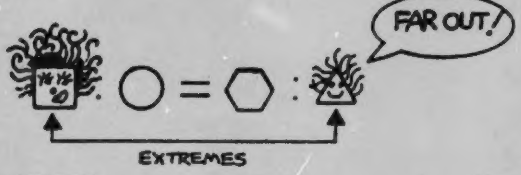
Teacher: ______________ **Signature** ______________ **Title**

WE MUST WORK TOGETHER

We are both found in proportions.
Do you know the mathematical meaning of mean? The means are in the middle.


"the mean is inbetween"
MEANS

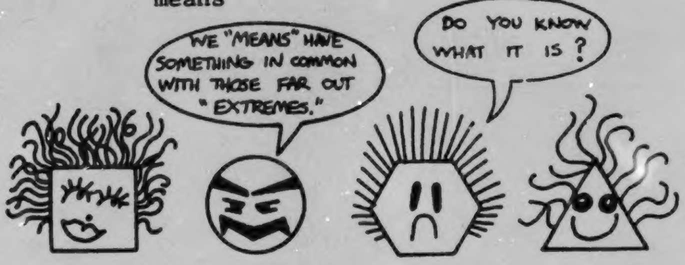
In politics the extremes are the far left and far right.


FAR OUT!
EXTREMES

means
1:2 = 3:6
extremes

extremes
3 to 4 = 12 to 16
means

$\frac{4}{6} \times \frac{10}{15}$ extremes are 4 and 15
means are 6 and 10.


WE "MEANS" HAVE SOMETHING IN COMMON WITH THOSE FAR OUT "EXTREMES."
DO YOU KNOW WHAT IT IS ?

9 : 12 = 3 : 4 7 : 21 = 1 : 3

Complete the table.

	EXTREMES	MEANS	EXTREMES	MEANS
	9 and 4	12 and 3		
ADD THEM				22
SUBTRACT THEM	5			
MULTIPLY THEM				
DIVIDE THEM	2¼			

Did you discover a rule? Does it work for these proportions?

a) $\frac{3}{5} = \frac{9}{15}$

b) 6 to 12 = 1 to 2

c) 12:18 = 6:9

d) $\frac{32}{12} = \frac{8}{3}$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math **Skills List No.** 8.1.35.1
Sight & Sound

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to solve a proportion.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will give the student a proportion with one number missing and have the student determine the missing number. For example 2/3 = 6/?. The student will be encouraged to determine what number will replace the ?. The teacher can remind the student that the product of the means, 3 x 6, will equal the product of the extremes, 2 x ?. Thus 3 x 6 = 2 x ? or 18 = 2 x ?. It is easy to see that the missing number is 9. The teacher can introduce the idea that missing numbers are often represented by letters. Thus the problem could be written 2/3 = 6/A. Then 3 x 6 = 2 x A. 18 = 2 x A. A= 9.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to solve proportions.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____ **Age** ___________
Last **First** **or**
Grade __________

Content Area General Math **Skills List No.** ____________________
Sight & Sound 8.1.35.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find a unit rate.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out to the student that a unit rate is a special example of a proportion. This proportion is one in which one member has the value of 1. The Rates Are Ratios activity is a good starting exercise. But I Want Only One is a good activity to work with unit rates. The teacher can guide the student through the exercises by using example A. 3 balls/$2.67 = 1 ball/A. 3 x A = 1 x $2.67. A = $.89. The teacher can point out to the student that this is the way that the unit price markings in grocery stores are determined.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to determine unit rates.

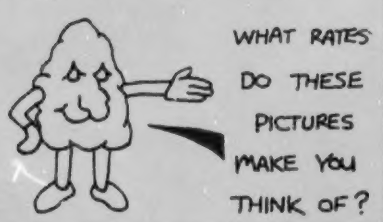
Total Days Participation ______________ **out of a possible** ____________________

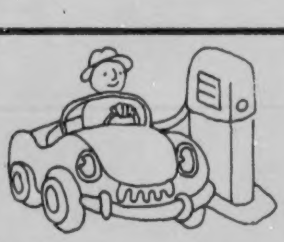
Criterion Attained: Yes ____________ **No** ______________ **Date** ______________

Teacher: ____
Signature **Title**

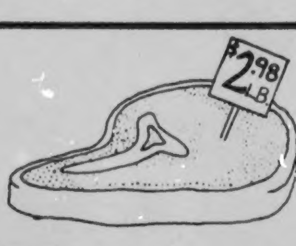
RATES ARE RATIOS

A rate is a special kind of ratio. With the rate the two measures being compared have different units, and the units cannot be converted to one another. One common rate is the rate of speed, 55 miles per hour. This means the ratio of miles traveled to the number of hours spent traveling is 55 miles to 1 hour, or 55 mph.

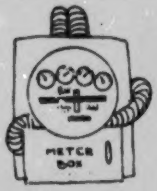

WHAT RATES DO THESE PICTURES MAKE YOU THINK OF?



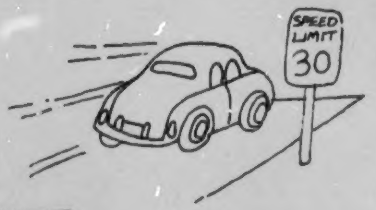
RATE ____________



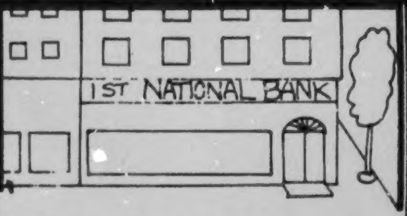
RATE ____________



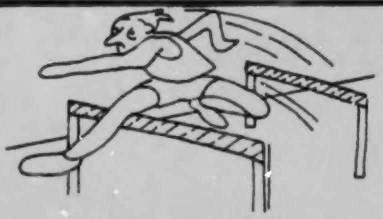
RATE ____________


SPEED LIMIT
30

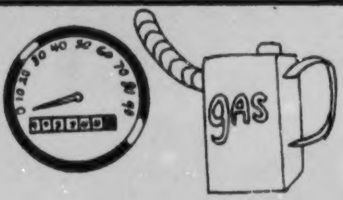
RATE ____________


1ST NATIONAL BANK

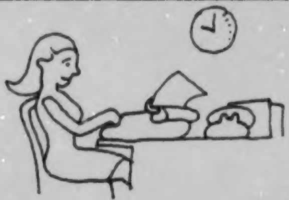
RATE ____________



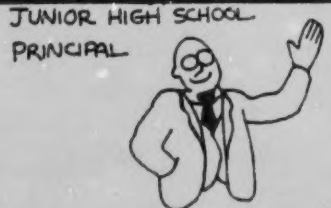
RATE ____________



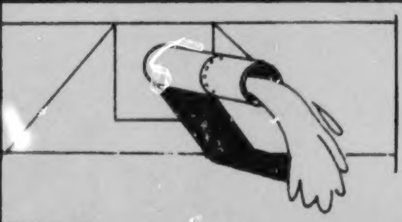
RATE ____________



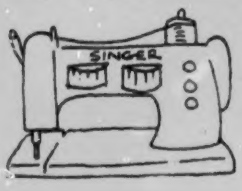
RATE ____________


JUNIOR HIGH SCHOOL PRINCIPAL

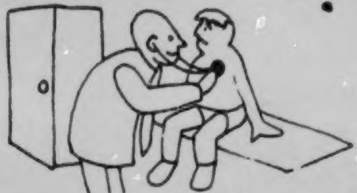
RATE ____________



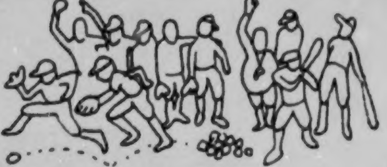
RATE ____________



RATE ____________



RATE ____________



RATE ____________

BUT I ONLY WANT ONE

Find the unit cost
(cost of one item) if:

A. 3 tennis balls cost $2.67

B. 2 dozen pencils cost $1.68

C. a 6-pack of pop cost $1.14

BURPES
COLA
BURPES

D. 1 dozen eggs cost $.96

E. 3 T-shirts
cost $3.36

F. 5 pounds of hamburger
cost $3.45

Find the better buy by finding the unit cost, for example cost per ounce.

G. 12 oz. of soap for $1.32
or 15 oz. for $1.50

H. 10 oz. of potato chips for
80¢ or 16 oz. for $1.12

I. $7.55 for 5 lbs. of steak or
$4.50 for 3 lbs. of steak

POTATO
CHIPS
10 oz
ZAPPY
POTATO
CHIPS
16 oz

J. 4 qts. of milk for $1.24 or
7 qts. of milk for $2.24

K. $20.98 for 2 pairs of jeans
or $31.77 for 3 pairs of
jeans

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ______________________________________ **Age** __________
Last First **or**
Grade __________

Content Area General Math **Skills List No.** ____________________
Sight & Sound 8.1.35.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to compare rates.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that if he knows the unit rates of different items, this makes them easy to be compared. The attached activities are good exercises for these comparisons.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

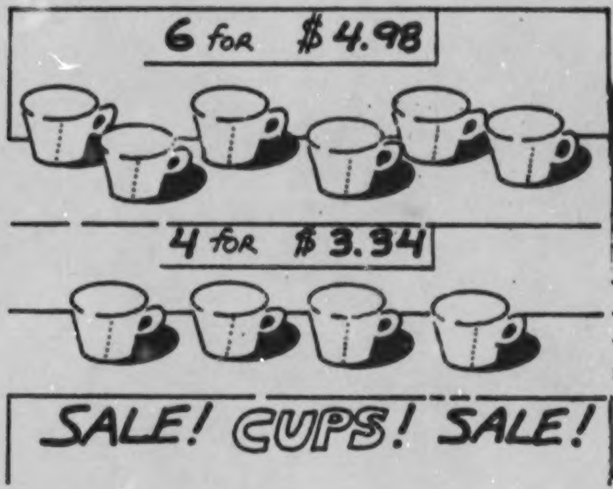
Given a teacher made test, the student will be able to compare rates.

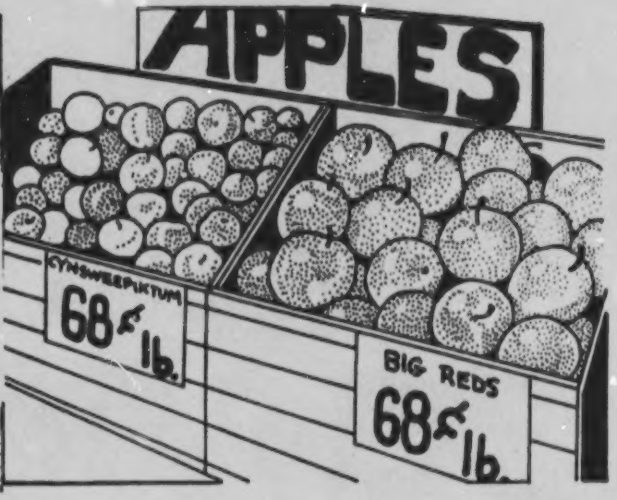
Total Days Participation ____________ **out of a possible** ________________

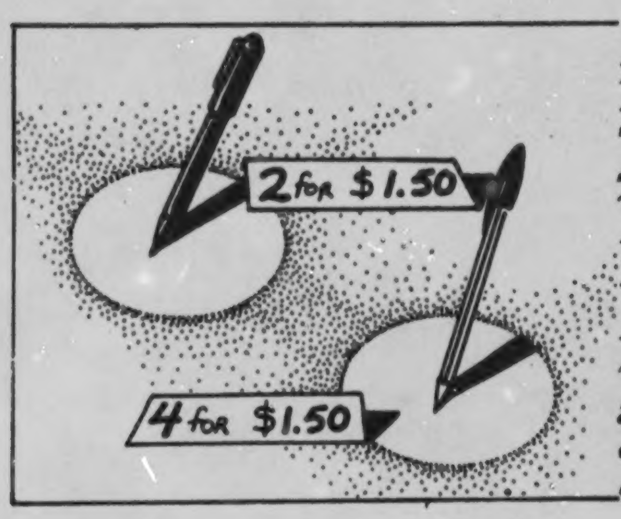
Criterion Attained: **Yes** ____________ **No** ____________ **Date** ______________

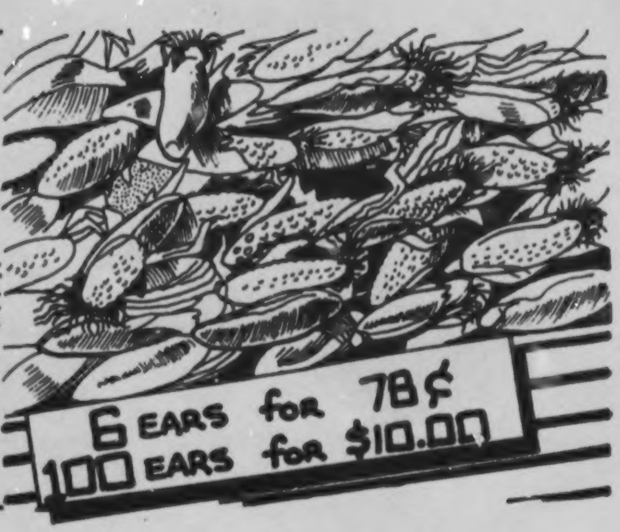
Teacher: ____
Signature **Title**

WHICH IS A BETTER BUY?

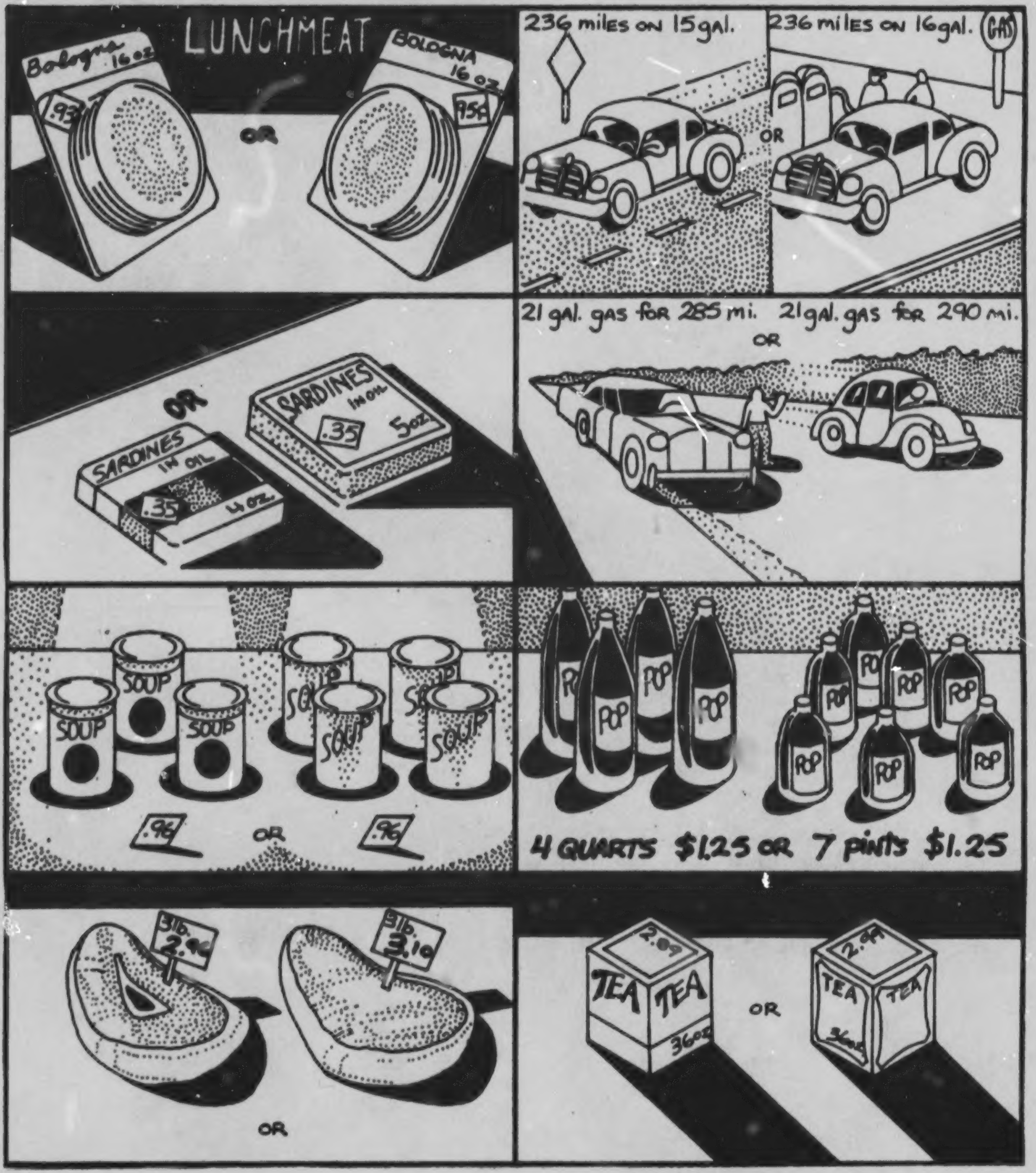

6 for $4.98
4 for $3.34
SALE! CUPS! SALE!


APPLES
CYNSWEEPIKTUM
68¢ lb.
BIG REDS
68¢ lb.

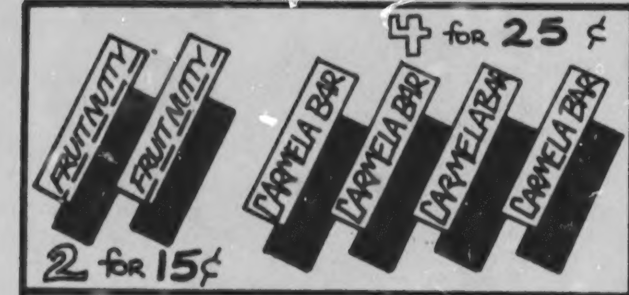

2 for $1.50
4 for $1.50

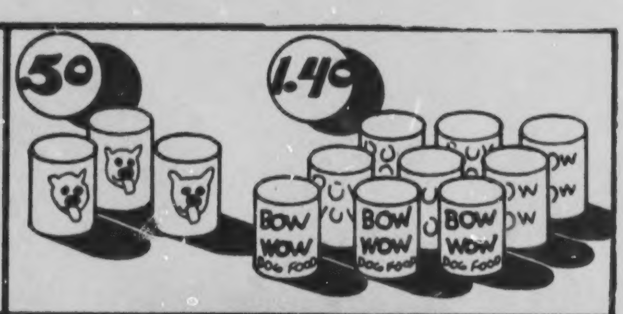

6 EARS for 78¢
100 EARS for $10.00

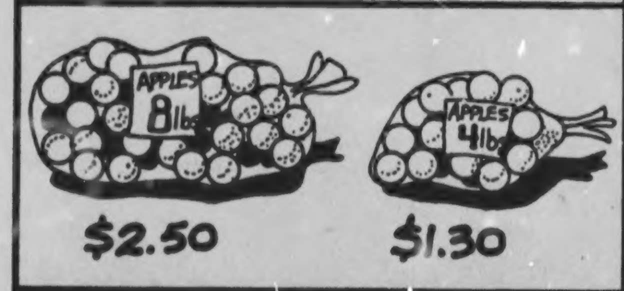
WHICH IS BETTER? 1

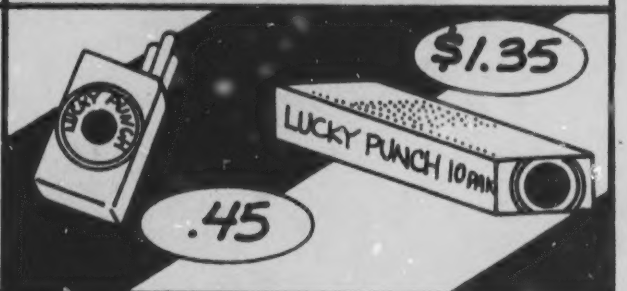

LUNCHMEAT
Bologna 16 oz.
.93
OR
BOLOGNA 16 oz.
95¢
236 miles on 15 gal.
236 miles on 16 gal.
GAS
OR
OR
SARDINES IN OIL
.35
4 oz
SARDINES IN OIL
.35
5 oz
21 gal. gas for 285 mi.
OR
21 gal. gas for 290 mi.
SOUP
SOUP
SOUP
SOUP
SOUP
SOUP
.96
OR
.96
POP
POP
4 QUARTS $1.25 OR 7 pints $1.25
3 lb. 2.96
3 lb. 3.10
OR
2.09
TEA TEA
36 oz
OR
2.09
TEA TEA
36 oz

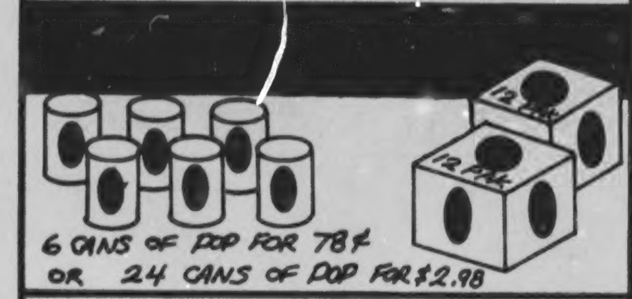
WHICH IS BETTER? 2

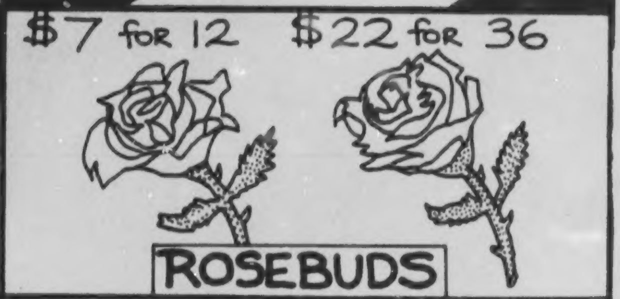

4 for 25¢
FRUIT NUTTY
FRUIT NUTTY
CARMELA BAR
CARMELA BAR
CARMELA BAR
CARMELA BAR
2 for 15¢

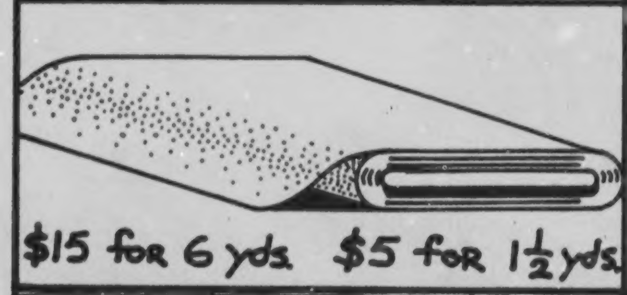

.50
1.40
BOW WOW DOG FOOD
BOW WOW DOG FOOD
BOW WOW DOG FOOD

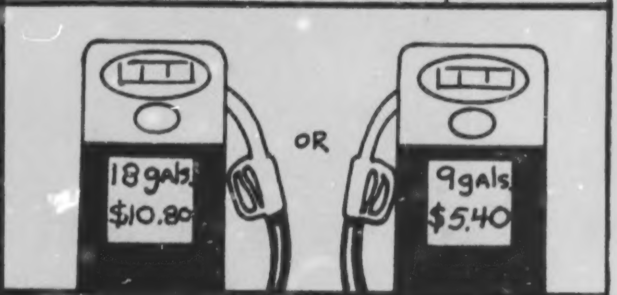

APPLES 8lbs
APPLES 4lbs
$2.50
$1.30

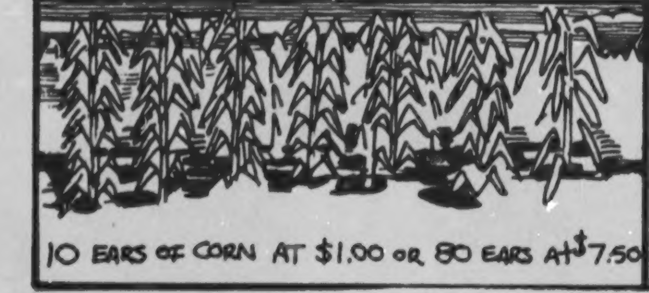

$1.35
LUCKY PUNCH
LUCKY PUNCH 10 PAK
.45

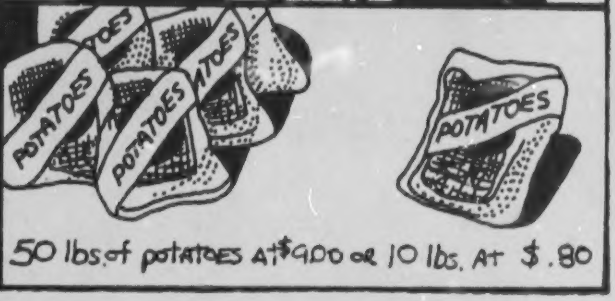

12 PAK
12 PAK
6 CANS OF POP FOR 78¢
OR 24 CANS OF POP FOR $2.98


$7 for 12
$22 for 36
ROSEBUDS


$15 for 6 yds.
$5 for 1½ yds.


18 gals. $10.80
OR
9 gals. $5.40


10 EARS OF CORN AT $1.00 OR 80 EARS AT $7.50


POTATOES
POTATOES
POTATOES
POTATOES
50 lbs. of potatoes at $9.00 or 10 lbs. at $.80

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____ **Age** ____________
Last First **or**
Grade ____________

Content Area General Math **Skills List No.** 08803, 08805
Sight & Sound 8.1.36

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify positive and negative numbers.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that the numbers that he usually deals with are positive numbers. He will also point out that these are just part of a larger set of numbers called the integers, which are made up of the positive whole numbers, their opposites and zero. The Below Zero activity is a good introduction to dealing with negative integers. The teacher can then help the student see that this is an extention of the whole number number line, as the negative numbers activity points out. This will help the student discover the concept of opposites and the ordering of numbers using the number line.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify integers.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

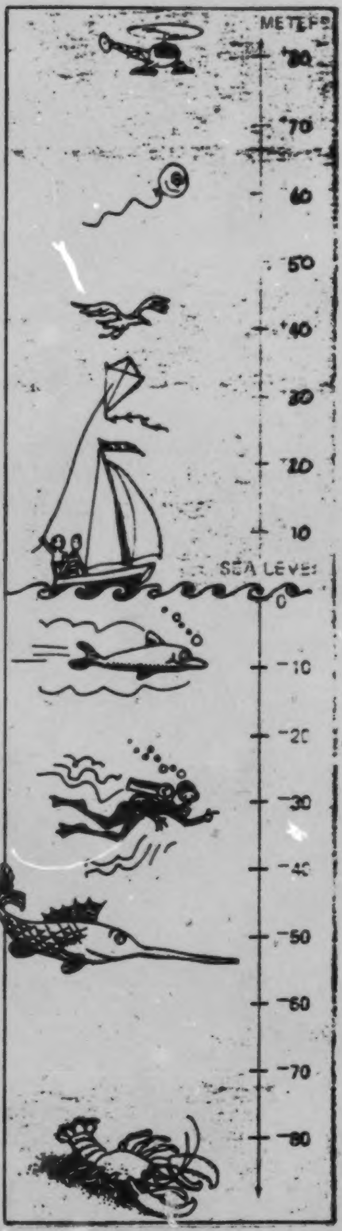
Below Zero

Problem

The boat is at sea level. which is at 0 meters.

The kite is 30 meters *above* sea level. We use $^{+}30$ (positive 30) for this.

The scuba diver is 30 meters *below* sea level. We use $^{-}30$ (negative 30) for this.



Algebra Model

Winning $5.
Diving 6 meters.
A 3000-meter mountain.

Use a positive or negative number to locate each of these.

1. The lobster
2. The dolphin
3. The bird
4. The swordfish
5. The balloon
6. The helicopter

Use a positive or negative number for each of these.

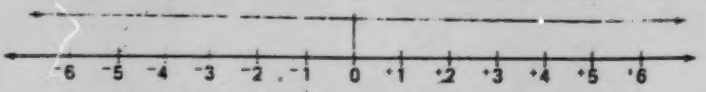
7. 10° above zero
8. A loss of 800 grams
9. 200 years ago
10. A rainfall of 3 cm
11. A profit of $150
12. A win of $12
13. A climb of 10 steps
14. An oil well 600 m deep
15. A jet at altitude 7 km
16. 2 days from now

Best Copy Available

Negative Numbers

Problem

On this number line:



negative numbers are to the left of zero

positive numbers are to the right of zero

$^-2$ and $^+2$ are opposites

Algebra Model

Find the opposite of $^+4$

Look for the number on the opposite side of 0 which is the same distance from 0.

The opposite of $^+4$ is $^-$

Name the opposite.

17. $^+3$ 18. $^-10$ 19. $^-5$ 20. $^-15$ 21. $^+25$

22. $^+88$ 23. $^-56$ 24. $^-1000$ 25. $^-1500$ 26. $^+2001$

Algebra Model

Arrange these numbers in order from least to greatest: $^+3, ^-2, 0, ^-4, ^+6$

Look at the number line. Put the numbers in order from left to right.

Least Greatest

$^-4, ^-2, 0, ^+3, ^+6$

Arrange in order from least to greatest.

27. $^+5, ^+1, ^+4, 0, ^+2$

28. $^-6, ^-3, ^-5, 0, ^-2$

29. $^-1, ^-5, 0, ^+4, ^+2$

30. $^+5, ^-4, ^-6, ^+3, ^+1$

31. $^-10, ^-5, ^+15, ^-15, 0$

32. $^+20, ^-12, ^-2, 0, ^+16$

33. $^-100, ^+50, ^-20, 0, ^+75$

34. $^+999, ^+482, ^-536, 0$

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area General Math **Skills List No.** 11500
Sight & Sound 8.1.37

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to add integers.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that this is an extention of adding whole numbers. The number line flow chart, is excellent in helping to develop the concept of adding integers in the students mind. The teacher will point out that the student first locates the initial number in the problem cn the number line. He then moves in to the right if he is adding a positive number, or moves to the left, if he is adding a negative number. The result of the movement will be the answer to the addition problem. As the student becomes more familiar with the process, he will find that he will no longer have to draw the number line on paper, but can picture it in his mind. The number line is always available if it needs to be used.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to add integers.

Total Days Participation ______________ **out of a possible** ______________

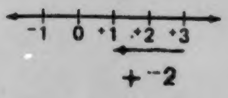
Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________
Signature **Title**

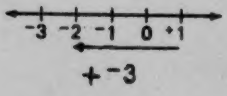
To add a *negative* number, we move to the left on the number line.

Algebra Model

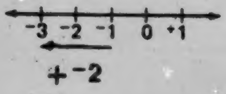
Add ${}^{-}2$ to ${}^{+}3$
${}^{+}3 + {}^{-}2 = {}^{+}1$



Add ${}^{-}3$ to ${}^{+}1$
${}^{+}1 + {}^{-}3 = {}^{-}2$



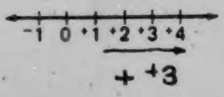
Add ${}^{-}2$ to ${}^{-}1$
${}^{-}1 + {}^{-}2 = {}^{-}3$



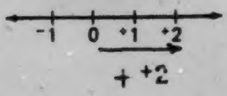
To add a *positive* number, we move to the right on the number line.

Algebra Model

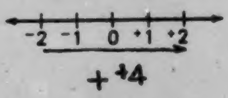
Add ${}^{+}3$ to ${}^{+}1$
${}^{+}1 + {}^{+}3 = {}^{+}4$



Add ${}^{+}2$ to 0
$0 + {}^{+}2 = {}^{+}2$



Add ${}^{+}4$ to ${}^{-}2$
${}^{-}2 + {}^{+}4 = 2$



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** __________

For Dates ______________ **to** ________________

Student Name ____ **Age** __________
Last **First** **or**
Grade ________

Content Area General Math **Skills List No.** ____________________
Sight & Sound 8.1.38.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to subtract one number from another using the number line.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out that the number line flow chart is an execllent way to introduce the concept of subtraction of integers. The student will first locate the original number on the number line. If the number to be subtracted is positive, he will then move to the left that distance. If the number is negative, the movement will be to the right. The student will notice that this is the opposite direction to the movement in addition. The result of the movement will be the answer to the subtraction problem.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to subtract integers using the number line.

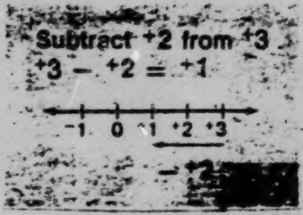
Total Days Participation ______________ **out of a possible** ________________

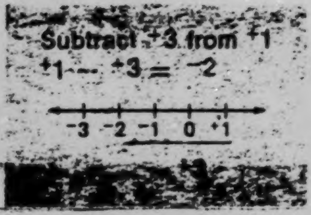
Criterion Attained: Yes ____________ **No** ______________ **Date** ______________

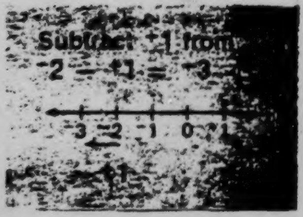
Teacher: ____
Signature **Title**

Problem: To subtract a *positive* number, we move to the left on the number line.

Algebra Model

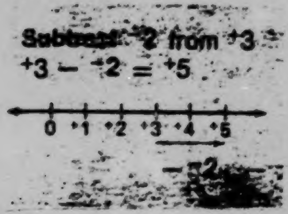

Subtract +2 from +3
+3 − +2 = +1
−1 0 +1 +2 +3
− +2

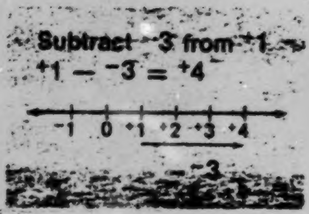

Subtract +3 from +1
+1 − +3 = −2
−3 −2 −1 0 +1

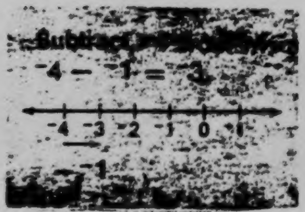

Subtract +1 from
−2 − +1 = −3
−3 −2 −1 0 +1
− +1

Problem: To subtract a *negative* number, we move to the right on the number line.

Algebra Model


Subtract −2 from +3
+3 − −2 = +5
0 +1 +2 +3 +4 +5
− −2


Subtract −3 from +1
+1 − −3 = +4
−1 0 +1 +2 +3 +4
− −3


−4 − −1 = −3
−4 −3 −2 −1 0 +1
− −1

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Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ (**Last** / **First**) **Age or Grade** ______

Content Area General Math **Skills List No.** Sight & Sound 8.1.38.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to subtract integers without using the number line.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will give the student several pairs of problems to be done on the number line. The pairs will demonstrate the relationship between addition and subtraction. For example:

+5 + -3 = +2	+5 - +3 = +2
-4 + +3 = -1	-4 - -3 = -1
-6 + +2 = -4	-6 - -2 = -4
-7 + -3 = -10	-7 - +3 = -10

With several examples, the student will discover the relationship between addition and subtraction. He will then be able to rewrite his subtraction problems into their equivalent addition problem and solve.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to subtract integers without using the number line.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: **Yes** ______ **No** ______ **Date** ______

Teacher: ______ (**Signature** / **Title**)

$^{+}3 - {}^{+}2$	Subtract by adding the opposite: $^{+}3 - {}^{+}2 = {}^{+}3 + {}^{-}2$	$^{+}3 + {}^{-}2 = {}^{+}1$	$^{+}3 - {}^{+}2 = {}^{+}1$
$^{+}3 - {}^{-}4$	Subtract by adding the opposite: $^{+}3 - {}^{-}4 = {}^{+}3 + {}^{+}4$	$^{+}3 + {}^{+}4 = {}^{+}7$	$^{+}3 - {}^{-}4 = {}^{+}7$

BEST COPY AVAILABLE

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age or Grade** ______________
Last **First**

Content Area General Math **Skills List No.** Sight & Sound 8.1.39

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to multiply integers.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that this process is simply an application of multiplying whole numbers. The following chart is a summarization for the student to use in determining the sign of the answer.

a) 2 positive numbers, product is positive
b) 2 negative numbers, product is positive
c) 1 positive and 1 negative number, the product is negative
d) 1 positive and 1 negative number, the product is negative

Factor	X	Factor	=	Product
+	x	+	=	+
-	x	-	=	+
+	x	-	=	-
-	x	+	=	-

After the student has determined the sign on the product, this is written down and then the multiplication is completed using the techniques for whole numbers.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to multiply integers.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last** / **First**) **Age** ______ **or Grade** ______

Content Area General Math **Skills List No.** Sight & Sound 8.1.40

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The teacher will be able to divide integers.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that this process is simply an application of dividing whole numbers. The following chart is a summarization for the student to use in determining the sign of the answer.

a) positive number divided by a positive number is positive
b) negative number divided by a negative number is positive
c) negative number divided by a positive number is negative
d) positive number divided by a negative number is negative

	Dividend	÷	Divisor	=	Quotient
a	+	÷	+	=	+
b	-	÷	-	=	+
c	-	÷	+	=	-
d	+	÷	-	=	-

After the student has determined the sign on the quotient, this is written down and the division is completed using techniques for whole numbers.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to divide integers.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________
Signature **Title**

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** ___________

For Dates _____________ **to** ________________

Student Name ____ **Age** __________
Last First or
Grade __________

Content Area General Math **Skills List No.** Sight & Sound 8.1.41.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to compile and organize data.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will go over the information in the story, Zappo the Zarian on the attached sheet. The student can get the feel of how information is obtained and organized. The teacher and student can go over the comparison made in each of the categories. If the student wished, a similar survey could be made and tabulated like the one in the story. This will give the student a feel for compiling information.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

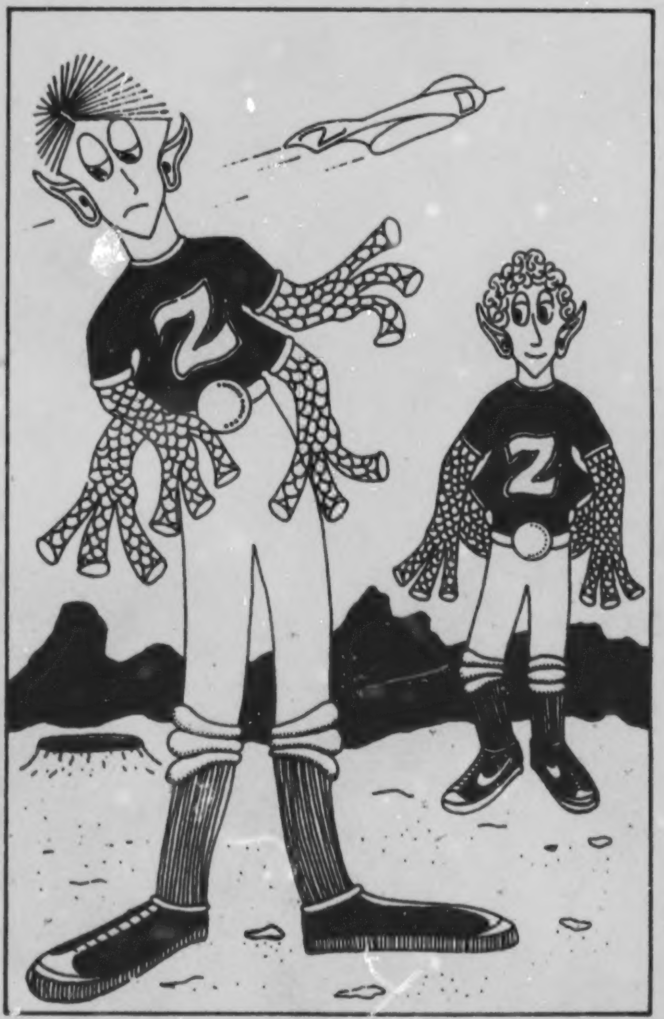
Given a teacher made test, the student will be able to compile and organize information.

Total Days Participation _____________ **out of a possible** __________________

Criterion Attained: **Yes** ___________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

ZAPPO THE ZARIAN



Far away on the planet Zarabo lives a group of beings called Zarians. In one community, there is a Zarian named Zappo. Zappo has been sad for several months. His teacher Zoolinda had been trying to get Zappo to tell her why he was so sad.

Zappo finally blurted out, "I'm so odd! My feet are too long. My nose is too short. My hair is straight. My waist is higher than most teenage Zarians. I'll bet no one has arms as short as mine. Everybody has Nike tennis shoes but me and I'll bet I live farther from school than any one else. I'm just not normal!"

Zoolinda asked Zappo if he'd like to find out how "odd" he really is. Zappo said, "What do you mean?" His teacher explained they could gather data on the teenage Zarians in the class and see how he compares. Zappo objected "I don't want any one to know how odd I am!" Zoolinda assured him no one would have to write their names on the data card.

The next day Zoolinda gave the students measuring tape and had each student fill out a data card. Here is Zappo's card.

Length of right arm 50 cm
Length of right foot 30 cm
Length of nose 2 cm
Distance of waist from floor 100 cm

Distance lived from school 9 blocks
Do you have tennis shoes? yes x no ____
If so, what brand? Brand x
Hair (check one) Curly ____
Wavey ____
Straight x

ZAPPO THE ZARIAN

(CONTINUED)

After school Zappo and Zoolinda looked at all the data cards. Zappo complained, "There are too many numbers, I still can't tell how odd I am." Zoolinda showed him how to make frequency tables for all the measurements. Here are some of the tables.

RIGHT ARM

Length	Frequency
48 cm	1
49 cm	2
50 cm	2
51 cm	5
52 cm	7
53 cm	6
54 cm	1

RIGHT FOOT

Length	Frequency
27 cm	6
28 cm	5
29 cm	3
30 cm	7
31 cm	3

NOSE

Length	Frequency
1 cm	2
1.5 cm	8
2 cm	4
2.5 cm	7
3 cm	3

Tennis shoes?

yes	18
no	6

Hair:

curly	12
wavey	11
straight	1

Zappo looked at the tables carefully. "Well," he said, "it looks like my arms are shorter than most Zarians in the class, but some have even shorter arms. My feet are the most common length and my nose length is in the middle. I didn't know some of my classmates don't even have tennis shoes, but I am the only one with straight hair..."

Zoolinda pointed out some other things. "Although your nose length is in the middle, most of your classmates don't have the same nose length as you do--it is normal to have this much variation in nose length. Your foot length isn't in the middle but it is the most common length. At your age, the length of feet varies a lot. If we all had the same heights and body lengths, it would be a pretty boring world. Isn't it nice that each of us is average in some ways and special in others?"

Zappo brightened up and thanked his teacher. "I guess that's a good way to look at it. I'm not odd at all. I'm like others in some ways and special in others. After all, I'm the only one in the class with straight hair!"

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ **Age** ______
Last **First** **or**
Grade ______

Content Area General Math **Skills List No.**
Sight & Sound 8.1.41.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to derive the mean from a set of information.

Activities: **What will be done, when, how much (time), by whom?**

The activity, A Mean Train, is a good activity to introduce the concept of mean. As the student works through the activity, he will become acquainted with the concept of mean. As the student becomes more aware of the concept of mean, the teacher can show the student the arithmetic approach to finding the mean. The student must remain aware of this concept as he is introduced to the concept of median and mode.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the mean of sets of information.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: **Yes** ______ **No** ______ **Date** ______

Teacher: ______
Signature **Title**

A MEAN TRAIN

Materials: bag of cubes from your teacher

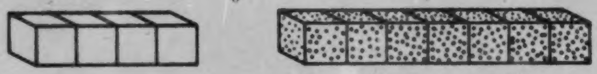
Each bag should contain 4 white, 7 green, 9 yellow, 12 blue and 13 red cubes. Other colors may be substituted.

Activity:

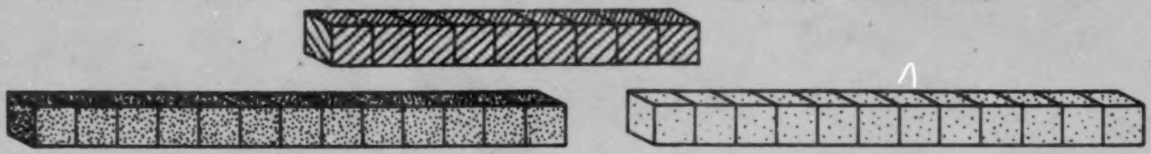
1) In the table write the colors of the cubes in the bag.

Color	Number
______	______
______	______
______	______
______	______
______	______

2) Write the number of cubes for each color.



3) Put all the cubes of one color end to end to make 5 trains.



4) Move some of the cubes to make 5 trains having the same length.

5) How many cubes in each train now? ______

6) THIS LENGTH IS CALLED THE MEAN (OR AVERAGE) LENGTH.

7) Were any of the original trains the same length as the mean length? _____ If so, which color? __________

Students may need 11 cubes of each color. Encourage students to start with 5 trains, each with 6 cubes.

8) Get more cubes.

9) Make 5 trains so that
   a) the mean length is 6 cubes,
   b) one train has the same length as the mean length,
   and c) each train is a different length.
   Show your teacher.

10) Make 5 trains so that
   a) the mean length is 7 cubes
   and b) no train has the same length as the mean length.
   Show your teacher.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ Last ______________ First ______________ **Age or Grade** ______________

Content Area General Math **Skills List No.** Sight & Sound 8.1.42

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to derive the median from a set of information.

Activities: **What will be done, when, how much (time), by whom?**

The activity, The Student In The Middle, is a good activity to introduce the concept of mean. As the student works through the exercise, he will become aware of the importance of placing the information in order. The student must remain aware of this concept as he is introduced to the concepts of mean and mode.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the median of sets of information.

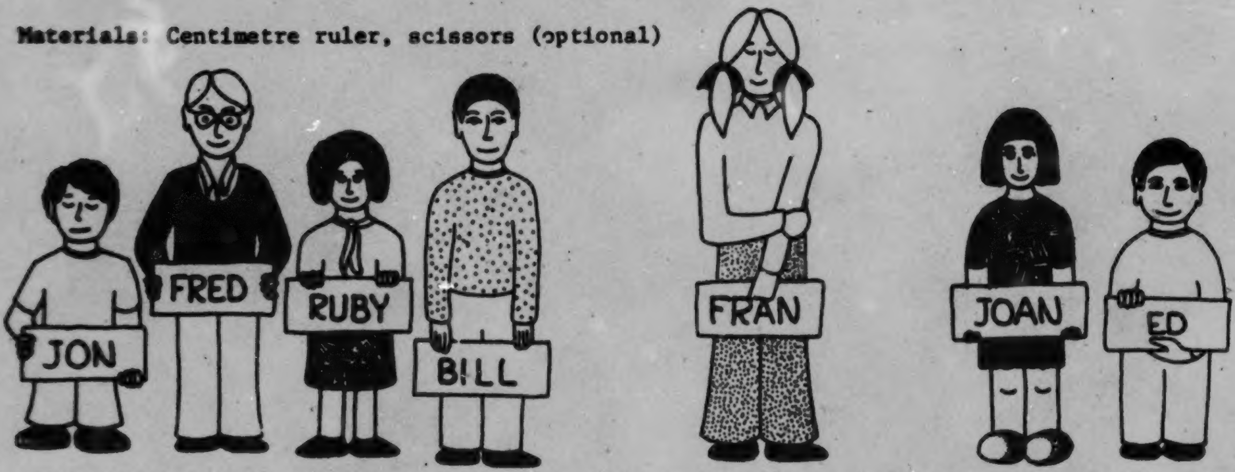
Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ Signature ______________ Title

THE STUDENT IN THE MIDDLE

Materials: Centimetre ruler, scissors (optional)



1) Find the height of each student above. Measure to the nearest half centimetre.

Jon _______ Ruby ______ Fran _______ Ed _______

Fred _______ Bill ______ Joan _______

Students could cut out the graphics and arrange them in order of height.

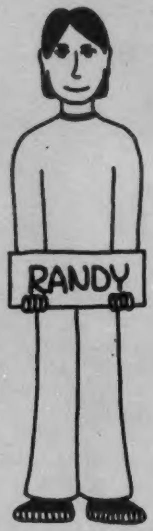
2) Arrange the heights in order from smallest to largest. ___,___,___,___,___,___,___,

3) Circle the middle height in #2.

WHEN NUMBERS ARE ARRANGED IN ORDER THE MIDDLE NUMBER IS THE MEDIAN.

4) Which student has the median height? ________

5) Randy wants to join the group. Find Randy's height. _______



6) What is the median height of the group now? _____

SINCE THERE IS AN EVEN NUMBER OF HEIGHTS THE MEDIAN IS HALF WAY BETWEEN THE MIDDLE TWO HEIGHTS.

7) Does any student have this median height? _____

8) Wilbur walks over to the group. He is 6 cm tall. Draw Wilbur next to Joan. Find the median height of the group. (Include Randy.) __________

9) Does any student have the median height? ______

10) Cindy joins the group. She is 7 cm tall. Draw Cindy next to Bill. Find the median height of the group. ________

11) Does any student have the median height? _______

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________________ **Age** __________
Last First or
Grade __________

Content Area General Math **Skills List No.**
Sight & Sound 8.1.43

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to derive the mode from a set of information.

Activities: What will be done, when, how much (time), by whom?

The activity, Ala Mode, is a good activity to introduce the concept of mode. As the student works through the exercise, he will become aware of the importance of organizing the information in frequency tables. The student must remain aware of this concept as he is introduced to the concept of mean and median.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the mode of sets of information.

Total Days Participation __________ out of a possible __________

Criterion Attained: Yes __________ No __________ Date __________

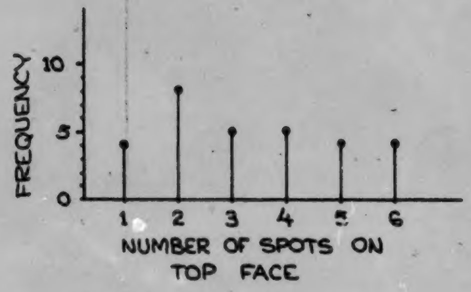
Teacher: ______________________________
Signature Title

A LA MODE

1) Jack threw a die 30 times and graphed the frequency of the outcomes. Look at the graph to the right.

Which column is the highest? __________

Which outcome occurred most often? ________



The item which occurs most often is the mode. In a frequency graph it is below the highest point of the graph.

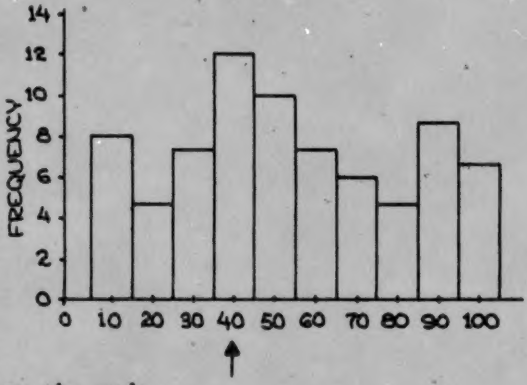
2) Alice drew an arrow to show the mode on the graph to the right.

Do you agree the mode is 40? _______

Some students may think 12 is the mode.

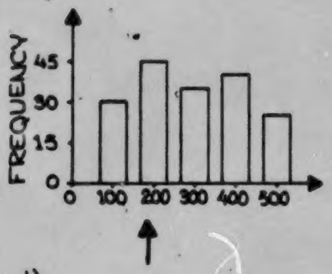
If so, why? __________________

____

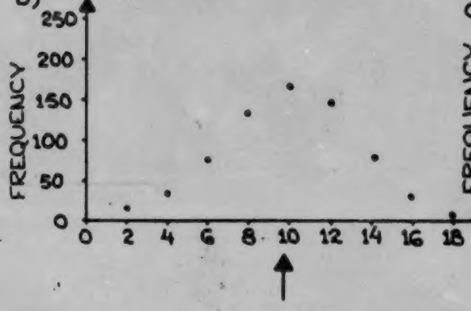


3) On each of the graphs, draw an arrow to show the mode.

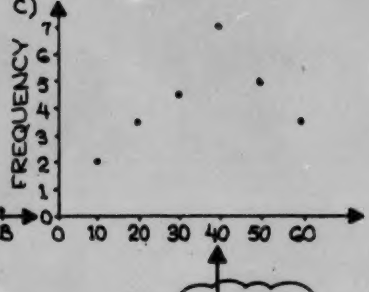
a)



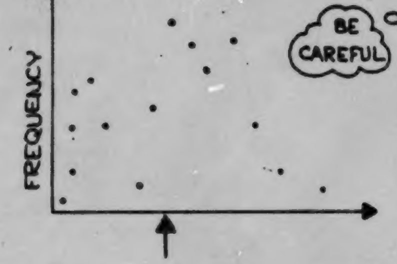
b)



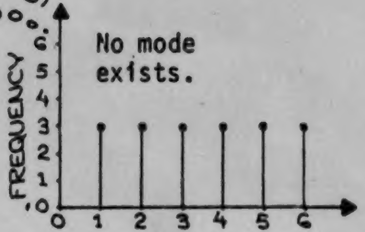
c)



d)

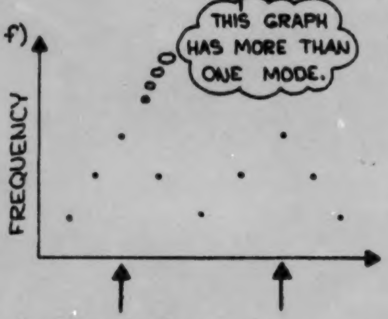


e)



No mode exists.

f)



4) Challenge: Throw a die 30 times and record the number of times each outcome occurs. Is there a mode? _____ If so, what? ________

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ **Age or Grade** ____________
Last **First**

Content Area Algebra **Skills List No.** 09700,13000, 15900, 18900
Sight & Sound 8.2.2.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to identify an arithmetic expression and simplify it.

Activities: What will be done, when, how much (time), by whom?

The teacher will tell the student that an arithmetic expression is simply a statement that involves two or more numbers and a mathematical operation. She will remind the student that mathematical operations are statements that tell a person what to do with the numbers, such as add, subtract, multiply or divide. The teacher will also remind the student that the actual carrying out of that operation is called simplifying the expression. Statements like 6 x 3, 4 + 2, 5 - 1, 8 ÷ 3 are all expressions. Replacing these expressions with their value is called simplifying the expression. So replacing 6 x 3 with 18, 4 + 2 with 6, 5 - 1 with 4, and 8 ÷ 3 with 2 2/3 is the act of simplifying the expression. The teacher will also point out that there are also more complex expressions. These often involve parenthesis. A parenthesis is a code to tell where to begin the operation. 6 - (3 - 1) is the same as 6 - 2 which finally simplifies to 4. The parenthesis can also be used with multiplication 8(3 + 2) means 8 x (3 + 2). Adding first gives 8 x 5 which gives a simplified statement of 40. Another type of expression involves a fraction bar. The fraction bar is another code to signify a starting point in simplification. In 32-5/4+5, the numerator is simplified to 27, and the denominator is simplified to 9, giving 27/9, with a single number on top and bottom, the fraction can finally be simplified to 3.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, tHe student will be able to identify and simplify an arithmetic expression.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: __________ **District:** __________ **Area** __________

For Dates __________ **to** __________

Student Name ____________________ **Age or Grade** __________
Last **First**

Content Area Algebra **Skills List No.** 09700, 13000, 15900, 18900
Sight & Sound 8.2.2.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify a variable and a variable expression.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will point out that sometimes a problem does not have all the information available, or that the value of a number could change. To represent that number in the problem, a letter is used. The student will notice that any letter can be used. These letters are called variables. A mathematical statement that contains a variable is called a variable expression. The following table shows some different variable expressions, what they mean and how the expression would be simplified.

Expression	Variable	Meaning	Description
$4a$	a	$4 \times a$	Multiply 4 and a
cd	c, d	$c \times d$	Multiply c and d
$3a + 2$	a	$3 \times a + 2$	Multiply 3 and a, then add 2 to the product
$\frac{M + N}{7}$	M, N	$(M + N) \div 7$	Add M and N, then divide the sum by 7

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify variables and variable expressions.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** __________ **No** __________ **Date** __________

Teacher: ____________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** __________
Last First **or**
Grade __________

Content Area Algebra **Skills List No.** 09700, 13000, 15900, 18900
Sight & Sound 8.2.2.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to find the value of a variable expression.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will remind the student that a variable expression cannot be completely simplified until the student knows the value of the variables. Once the student knows the value of the variable, then the expression can be simplified. The following table will give the student some examples of how this is done. The student needs to be reminded that these values for the variables are only necessarily true for this situation.

Expression	Value of Variable	Substitute	Value of Expression
r + s	r = 3, s = 4	3 + 4	7
ab	a = 7, b = 5	7 x 6	42
$\frac{1 + m}{4}$	1 = 19, m = 5	$\frac{19 + 5}{4}$	6
2c - 4d	c = 5, d = 2	(2x5) - (4x2)	2
6 (e + f)	e = 5, f = 2	6(5 + 2)	42

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the value of variable expressions.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** __________
Last **First** **or**
Grade __________

Content Area Algebra **Skills List No.** __________
Sight & Sound 8.2.3

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to write an expression involving exponents.

Activities: What will be done, when, how much (time), by whom?

The teacher will remind the student that many arithmetic expressions will involve a repeated multiplication. This includes statements like 6 x 6 x 6, 3 x 3 x 3 x 3 x 3, or c x c x c x c x c x c. In every case, the student will notice that the same number is being used as a multiplier. These expressions can be rewritten in a shorter form using a system called exponential notation. In each case, the number being multiplied is called the base number, and the number of times they are multipled is the exponent. For example:

3 times		3	exponent
6 x 6 x 6	=	6	base number
5 times		5	exponent
3 x 3 x 3 x 3 x 3	=	3	base number
6 times		6	exponent
c x c x c x c x c x c	=	c	base number

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to rewrite expressions involving exponents.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age** ______________
Last **First** **or**
Grade ______________

Content Area Algebra **Sight & Sound** 8.2.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to evaluate an expression involving exponents.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will remind the student that exponential notation is a method of writing a repeated multiplication in a shorter form. The student will then have to expand the multiplication in order to simplify an exponential expression. Thus to simplify 3^4, the student must first rewrite it as 3 x 3 x 3 x 3. Multiplying gives a total of 81 for a simplified expression. To evaluate X^3, when x = 4. The student must first substitute 4 for x. This makes the statement 4^3. Expansion changes the form to 4 x 4 x 4. Multiplying makes this expression worth 64. The teacher will remind the student that in an expression like $4a^3$, only the a, or the factor immediately in front of the exponent is raised to that power. If a = 2, then $4a^3$ becomes 4×2^3, or 4 x 2 x 2 x 2. This simplifies to 32.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to evaluate exponential expressions.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________ ______________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________________ **District:** ____________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** __________
Last **First** **or**
Grade __________

Content Area Algebra **Sight & Sound** 8.2.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to evaluate arithmetic expressions using the correct order of operations.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out that in an expression that involves more than one operation, confusion can be eliminated if everyone uses the same method of simplifying the expression. The basic order of operations is listed as follows. The student will be reminded that expressions are always solved working left to right.

1) Simplify any numbers being raised to a power.
2) Any multiplication or division.
3) Any addition or subtraction.

The student can use those rules to simplify the following expression:

$10 + 3^2 \cdot 2 \div 6 - 2^3$	
$10 + 9 \cdot 2 \div 6 - 8$	(Numbers raised to power are simplified.)
$10 + 18 \div 6 - 8$	(Multiplication of 9 and 2.)
$10 + 3 - 8$	(18 is divided by 6.)
$13 - 8$	(10 and 3 are added.)
5	(8 is subtracted from 13.)

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to simplify expressions using the correct order of operations.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ________

For Dates __________ **to** __________

Student Name ______________________________ **Age or Grade** ________
Last **First**

Content Area Algebra **Sight & Sound** 8.2.5.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify the basic characteristics of equations.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can start this discussion by stating that an equation must have an equal sign (=). She can then give several true equations, like 6 = 6, 4 = 4, 3 + 2 = 5 and so on. The teacher then needs to help the student discover the basis for maintaining equality. This basic promise is, to maintain equality, the same operation must be preformed to the left and right side of the equal sign. For example, if you start with 6 = 6, and if 7 is added to the left side $6 + 7 \overset{?}{=} 6$. It must also be added to the right 6 + 7 = 6 + 7, 13 = 13.

The teacher should help the student through several operations involving addition, subtraction, multiplication and division.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify the basic characteristics of equations.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes ________ **No** ________ **Date** ________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** __________
Last **First** **or**
Grade __________

Content Area Algebra Sight & Sound 8.2.5.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to solve equations involving addition.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can start by giving the student a problem like a + 8 = 12. The first thing the student should notice is that it is asking what number can be increased by 8 to give a result of 12. If the student can recoginize that it is 4, he has a good grasp of the situation. The student needs to know that those problems that can be done in their head should continue to be done there. A technique to solve all problems of this type is also necessary to know. It goes like this:

$c + 18 = 49$ ← The plus sign means increased by.
$\underline{\ \ -18}\ \underline{-18}$ ← To find the original number, the problem must then be decreased by, or subtracted by, 18.

$c \qquad = 31$ ← Remember to maintain equality, 18 must be subtracted from both sides.

$31 + 18 = 49$ ← Finally check the solution by substituting the value of the variable for the variable.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to solve equations involving addition.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** __________ **No** __________ **Date** __________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area Algebra Sight & Sound 8.2.6

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to solve equations involving subtraction.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should start by giving the student an equation like c - 8 = 5. The first thing the student should notice is that the equation is asking the question, what number decreased by 8 gives a result of 5. If the student can come up with 13 as a result, he has a good grasp of the concept. The student needs to know that those problems that can be done in their head should continue to be done there. A technique to solve all problems of this type is also necessary to know. It goes like this:

$b - 22 = 14$ ← The subtract sign means decreased by

$\underline{\ \ +22}\ \ \underline{+22}$ ← To find the original number, the problem must be increased by, or added to, 22.

$b \qquad = 36$ ← Remember to maintain the equality, 22 must be added to both sides.

$36 - 22 = 14$ ← Finally check the solution by substituting the value of the variable for the variable.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to solve equations involving subtraction.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ **Age** ______________
Last First **or**
Grade ______________

Content Area Algebra Sight & Sound 8.2.7

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to solve equations involving multiplication.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should start by giving the student an equation like 8N = 32. The first thing the student should notice is that the equation is asking 8 times what number is 32. If the student can come up with 4 as a result, he has a good grasp of the concept. The student needs to know that those problems that can be done in their head should continue to be done there. A technique to solve all problems of this type is also necessary to know. It goes like this:

$13r = 156$ ← No operation sign between the number and letter means multiplied by.

$\frac{13r}{13} = \frac{156}{13}$ ← Since 156 is the result of multiplying something by 13, to find the missing number, the inverse of multiplication, division, is done.

$r = 12$ ← Remember, to maintain equality, 13 must divide into both sides.

$13 \cdot 12 = 156$ ← Finally check the solution by substituting the value of the variable for the variable.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to solve equations involving multiplication.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ________________

Student Name ____ **Age** ____________
Last First or
Grade __________

Content Area Algebra **Skills List No.**
Sight & Sound 8.2.8

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to solve equations involving division.

Activities: What will be done, when, how much (time), by whom?

The teacher should start by giving the student an equation like $\frac{C}{4} = 7$. The first thing the student should notice is that the equation is asking what number divided by 4 gives a result of 7. If the student can come up with 28 as a result, he has a good grasp of the concept. The student needs to know that those problems that can be done in their head should continue to be done there. A technique to solve all problems of this type is also necessary to know. It goes like this:

$\frac{C}{6} = 23$ ← The fraction bar means division.

$\frac{C}{6} \cdot 6 = 23 \cdot 6$ ← Since 23 is the result of dividing some number by 6, to find the number the inverse of division, multiplication, is done.

$C = 138$ ← Remember, to maintain equality, both sides must be multiplied by 6.

$\frac{138}{6} = 23$ ← Finally, check the solution by substituting the value of the variable for the variable.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to solve equations involving division.

Total Days Participation ______________ **out of a possible** ____________________

Criterion Attained: Yes ____________ **No** ______________ **Date** ______________

Teacher: ____
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last** / **First**) **Age or Grade** ____________

Content Area Geometry **Skills List No.** 55800, 56700, 58500
Sight & Sound 8.3.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will know the basic definitions of a mathematical model.

Activities: What will be done, when, how much (time), by whom?

The teacher will point out to the student that in many different areas, a person is able to work directly with the subject he is studying. In science, the student can measure the distance something goes, or disect a frog to see all of its parts. In history you study events that actually took place. Mathematics, on the other hand, is a series of concepts or ideas. The things used in teaching math are used to represent ideas. Because the objects are not concrete, models must be made to be studied. The student can be asked to see models in other areas. For example, before an airplane is built, a small one is built to see if it will work in the manner the engineers wished it. In a similar fashion, if a person draws a square, he is only drawing a model of a square, for it is impossible to put all of the exact specifications of a square on paper, yet when it is done, we use the drawing to imagine an object with right angles and congruent sides.

A map is another model. It is a picture or an imitator of the countryside. It cannot be perfect, but it effectively shows how to get from one place to another.

These are just a few examples of mathematical models. As the student continues through math classes, he will continue to see how models play an integral part in the math program.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify mathematical models.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________ (**Signature** / **Title**)

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ Last ______________ First ______________ **Age** ______ **or Grade** ______

Content Area Geometry **Skills List No.** 56100, 57300

Sight & Sound 8.3.2

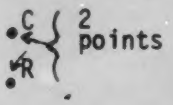
Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will know the basic definition of a point.

Activities: What will be done, when, how much (time), by whom?

The figures on the attached page are good models of a point. The teacher needs to point out to the student that a point in mathematics has no size at all. It has no length, no width, no height. This is opposed to the model of a point that we can draw. A point is a location in space.

The teacher will want to point the preceding facts out to the students. In addition, he will want to note that points are labeled with capital letters, not lower case ones. Also, only one point can be located in a particular spot. If there are two points, they must be separate from each other.



Criterion: What specific evidence will we accept to indicate that the objective was attained?

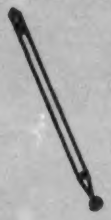
Given a teacher made test, the student will be able to identify points using the basic definitions.

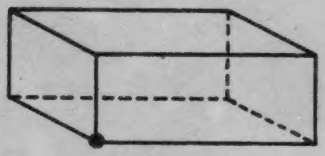
Total Days Participation ______________ **out of a possible** ______________

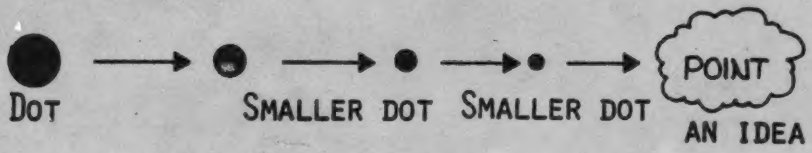
Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ **Signature** ______________ **Title**

THESE FIGURES SUGGEST POINTS.






DOT
SMALLER DOT
SMALLER DOT
POINT
AN IDEA

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________________ **District:** ____________________ **Area** ____________

For Dates ____________ to ____________

Student Name ____ **Age** ____________
Last First **or**
Grade ____________

Content Area Geometry **Skills List No.** 56100, 57000
Sight & Sound 8.3.3.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic definition of a line.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the illustrations on the attached page as an introduction to a line. The teacher needs to note that the line has no starting or stopping point. A line is made up of an infinite number of points, lined up side by side. Since it consists of points, it has no width.

The teacher needs to note that lines are usually labeled in one of two ways. One way is by identifying a pair of points on the line $\longleftarrow\!\underset{E}{\bullet}\!-\!-\!\underset{F}{\bullet}\!\longrightarrow$ and calling the point by that name $\overleftrightarrow{EF}$. The double arrow sign over the letters signifies a line.

A second way is with a small letter on the line $\overset{\qquad r}{\longleftrightarrow}$. The arrows at each end of the figure signify that the figure continues in opposite directions indefinitely.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

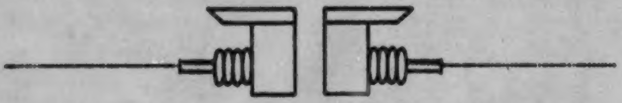
Given a teacher made test, the student will be able to identify lines by using the basic definitions.

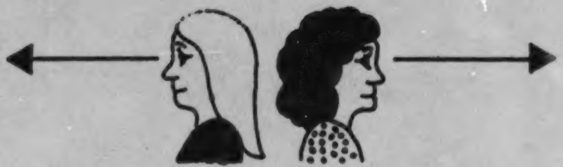
Total Days Participation ____________ **out of a possible** ____________

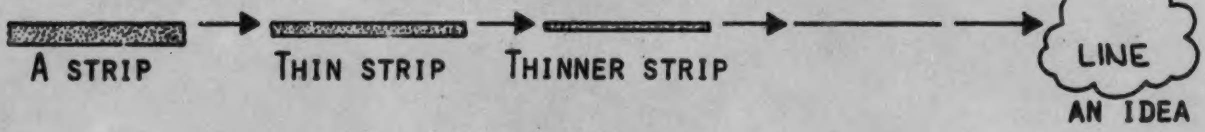
Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

THESE FIGURES SUGGEST LINES.






A STRIP
THIN STRIP
THINNER STRIP
LINE
AN IDEA

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ______________________________ **Age** ________
Last First
or
Grade ________

Content Area Geometry **Skills List No.** 56100, 57000
Sight & Sound 8.3.3.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic definition of a line segment.

Activities: **What will be done, when, how much (time), by whom?**

The activity, Part of a Line, on the attached sheet is a good activity for the teacher to have the student do to introduce the concept of a line segment. The student will discover that a line segment is a part of a line, with a definite starting point and stopping point, and a measurable length. He will also discover that a segment is what he has been drawing when he was drawing a "line" 3 cm long. A segment is named by the two end points of the segment C ●——● D. This line segment is called $\overline{CD}$. The student will discover that the relationship between the number of points and the number of segments in activity C can be determined by the formula $\frac{(N)\ (N-1)}{2}$, where N is the number of points. For example, if there are 3 points, there will be $\frac{(3)\ (2)}{2}$ or $\frac{6}{2}$ or 3 segments.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

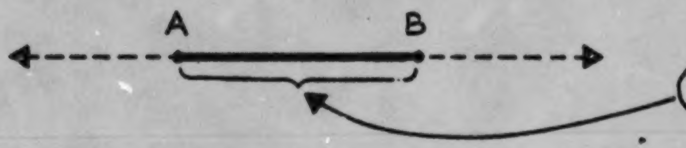
Given a teacher made test, the student will be able to identify line segments by using the basic definitions.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ______________________________
Signature **Title**

PART OF A LINE



This is line segment AB. It can also be called line segment BA.

A and B are called the end points of line segment AB.

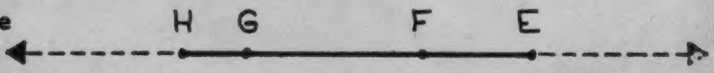
A) Find five examples of line segments in your classroom.

1) ____________________ 2) ____________________

3) ____________________ 4) ____________________

5) ____________________

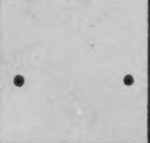
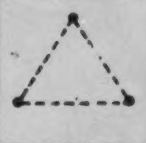
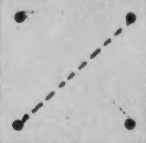
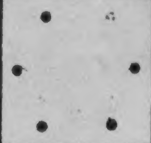
B) In the diagram to the right one line segment is line segment GE.



Name four other line segments in the diagram.

1) ____________ 2) ____________ 3) ____________ 4) ____________

C) If some points are arranged so that no three are in a line, what is the maximum number of different line segments that can be drawn to connect each point to every other point?

2 POINTS	3 POINTS	4 POINTS	5 POINTS	6 POINTS
				
	3			

D) Can you predict the number of segments that will connect 7 points?

Make 7 points and check your prediction.

E) Predict for 10 points.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

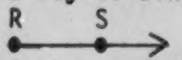
Student Name ____________ **Age** ____________
Last **First** **or**
Grade ____________

Content Area Geometry **Skills List No.** 56100, 57000
Sight & Sound 8.3.3.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic definition of a ray.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, One Way Ray, to introduce the student to the concept of a ray. The student will discover that a ray is a part of a line that has a definite beginning, but no end. The first letter of the name of a ray is always the beginning of the ray, and the second letter is a point on the ray 

. This ray is called $\overrightarrow{RS}$. The student will discover that the relationship between the number of points and the number of rays for item D (on the worksheet) is (N) (N·1), where N is the number of points, thus for 3 points, the number of rays is (3) (2) or 6.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify rays by using the basic definitions.

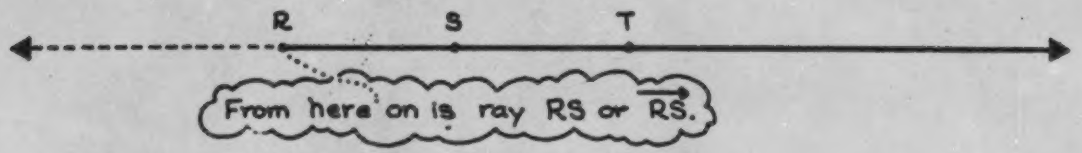
Total Days Participation ____________ **out of a possible** ____________

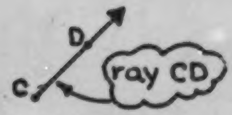
Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

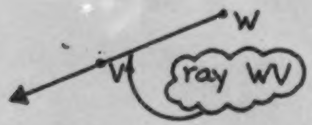
Teacher: ____________
Signature **Title**

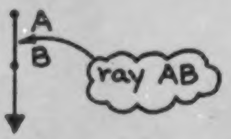
ONE WAY RAY

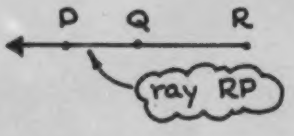
A)


R
S
T
From here on is ray RS or $\overrightarrow{RS}$.





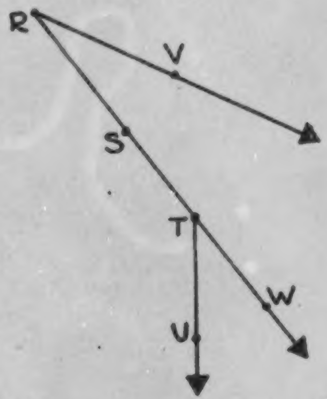




1) Can the top ray be called ray RT? Ray ST? Ray SR? For each case answer why or why not. ______________________________

B) Find an example of a ray in your classroom. ______________________________

C) Name four different rays in the diagram to the right.



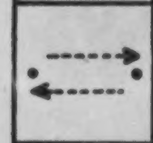
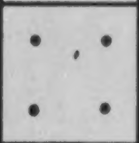
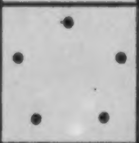
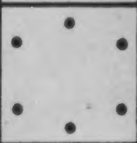
1) __________

2) __________

3) __________

4) __________

D) If some points are arranged so that no three are in a line, what is the maximum number of rays that can be drawn using the points as end points for the rays?

2 POINTS	3 POINTS	4 POINTS	5 POINTS	6 POINTS
				
2	(6)	(12)	(20)	(30)

E) Predict the number of rays for 7 points.

F) How do these numbers compare to the number of line segments connecting the points? Explain.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** __________

For Dates ______________ to ________________

Student Name ____ **Age** __________
Last First or
Grade __________

Content Area Geometry **Skills List No.** 56100, 57000
Sight & Sound# 8.3.3.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know the definition of parallel and intersecting lines.

Activities: What will be done, when, how much (time), by whom?

The teacher can give the activities, But What Do We Have in Common?, and Impossible or Improbable?, as good introductions to intersecting and parallel lines. The student will discover that parallel lines are always the same distance apart, and will never meet. Intersecting lines, on the other hand, will meet at exactly one point.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify parallel and intersecting lines given the basic definitions.

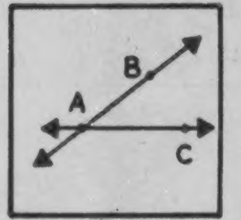
Total Days Participation ______________ out of a possible ____________________

Criterion Attained: Yes __________ No ______________ Date ________________

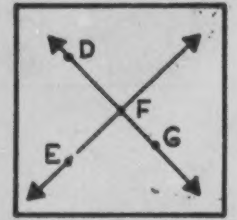
Teacher: ____
Signature Title

BUT WHAT DO WE HAVE IN COMMON?

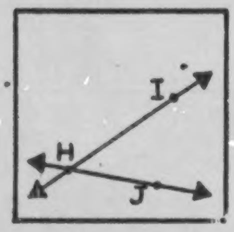
1 NAME THE POINT THAT IS ON BOTH LINES.
(YOU MAY HAVE TO EXTEND THE LINES.)



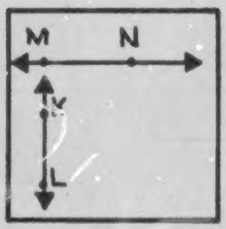
A



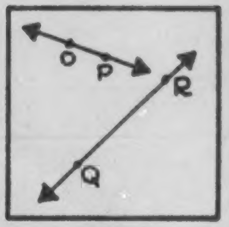
F



H

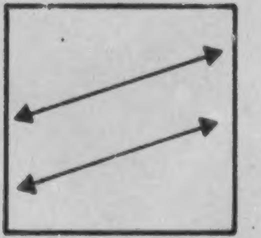


M



R

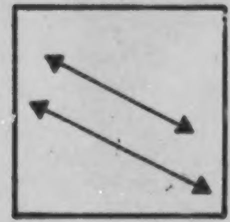
2 IF TWO LINES HAVE A POINT IN COMMON THEY ARE CALLED INTERSECTING LINES.



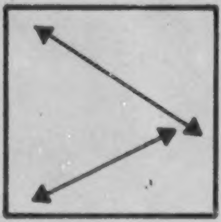
WILL THESE LINES INTERSECT? NO
(YOU MIGHT WANT TO EXTEND THE LINES.)

LINES WHICH DO NOT INTERSECT ARE CALLED PARALLEL LINES.

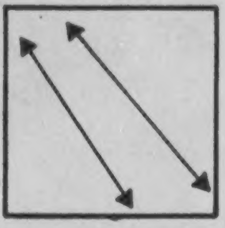
3 LABEL EACH PAIR OF LINES AS PARALLEL OR INTERSECTING.
(YOU MAY HAVE TO EXTEND THE LINES.)



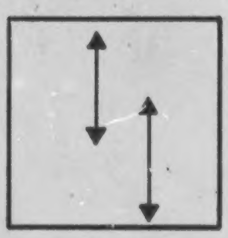
PARALLEL



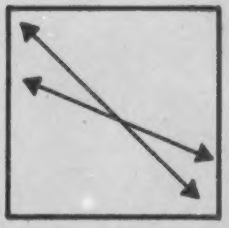
INTERSECTING



INTERSECTING

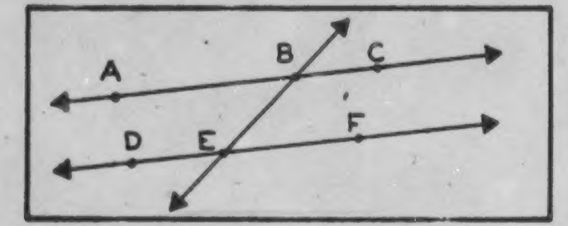


PARALLEL



INTERSECTING

4



NAME TWO LINES THAT ARE PARALLEL.
$\overleftrightarrow{AB}$, $\overleftrightarrow{DE}$

NAME THE LINE THAT INTERSECTS TWO LINES. $\overleftrightarrow{BE}$

NAME TWO POINTS OF INTERSECTION.
B, E

LINE BE IS CALLED A TRANSVERSAL.

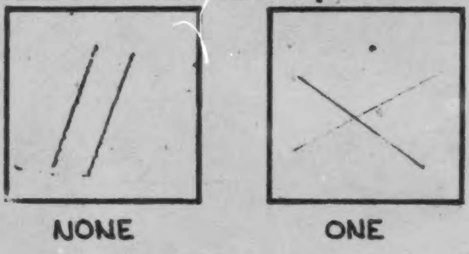
IMPOSSIBLE? OR IMPROBABLE?

Materials: You may wish to use straws to help you complete this worksheet. You may want to flatten the straws.

Sketch an example in each box. Are some impossible? Some may be done several different ways.

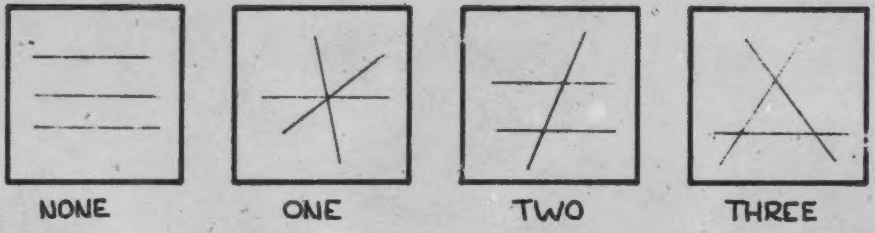
1 TWO LINES

INTERSECTION POINTS :



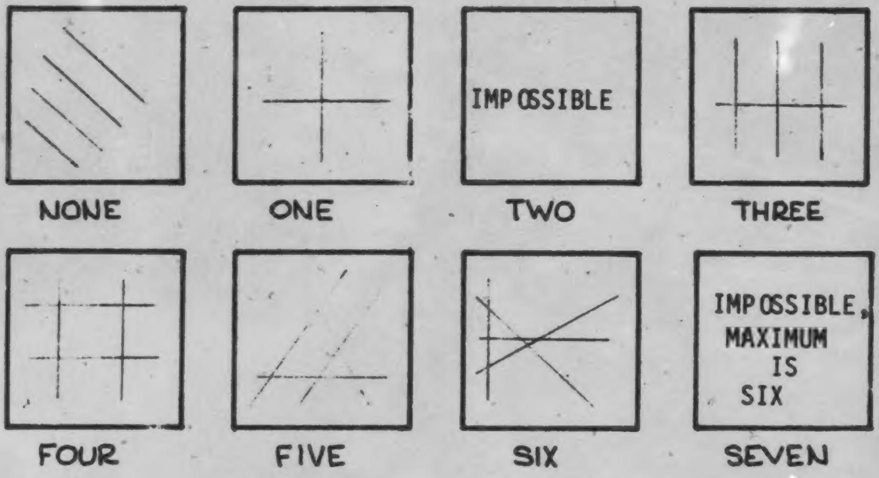
2 THREE LINES

INTERSECTION POINTS :


NONE
ONE
TWO
THREE

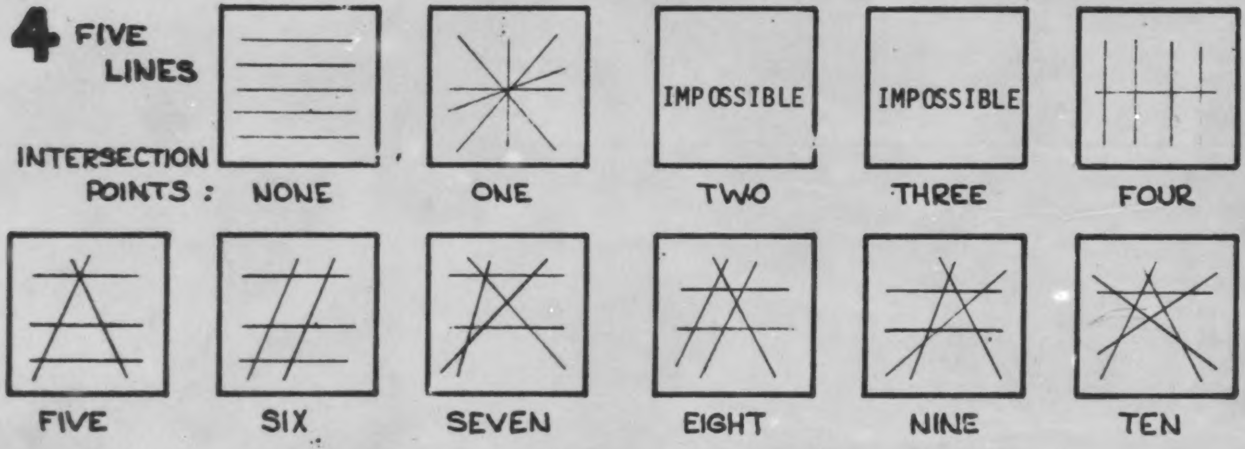
3 FOUR LINES

INTERSECTION POINTS :


NONE
ONE
IMPOSSIBLE
TWO
THREE
FOUR
FIVE
SIX
IMPOSSIBLE, MAXIMUM IS SIX
SEVEN

4 FIVE LINES

INTERSECTION POINTS :


NONE
ONE
IMPOSSIBLE
TWO
IMPOSSIBLE
THREE
FOUR
FIVE
SIX
SEVEN
EIGHT
NINE
TEN

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ (Last) ____________ (First) **Age or Grade** ____________

Content Area Geometry **Skills List No.** 57300, 57600, 57900, 58200
Sight & Sound 8.3.4.1

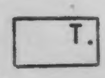
Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know the basic definition of a plane.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the illustrations on the attached sheet to introduce the concept of a plane. A plane can be thought of as an infinite number of lines laying side by side. This means that the length and width go on indefinitely, in all directions. It also has no thickness, since a line has no thickness.

The teacher needs to note that a wall, a floor, a desk top, or a ceiling are good models of planes, if the student allows their dimensions to continue outward in their mind. A model of a plane is usually represented by a parallelogram with a capital letter in the upper right-hand corner.



Criterion: What specific evidence will we accept to indicate that the objective was attained?

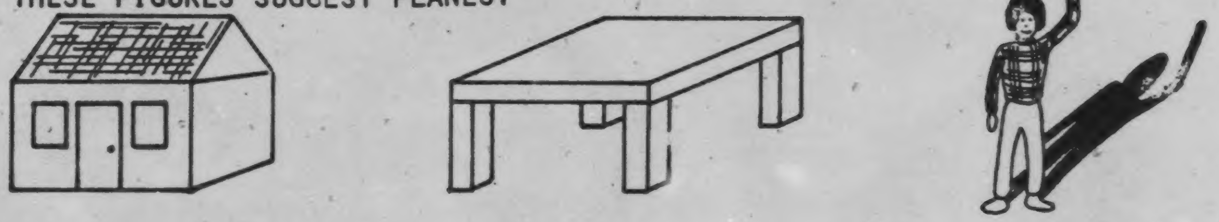
Given a teacher made test, the student will be able to identify planes by using the basic definitions.

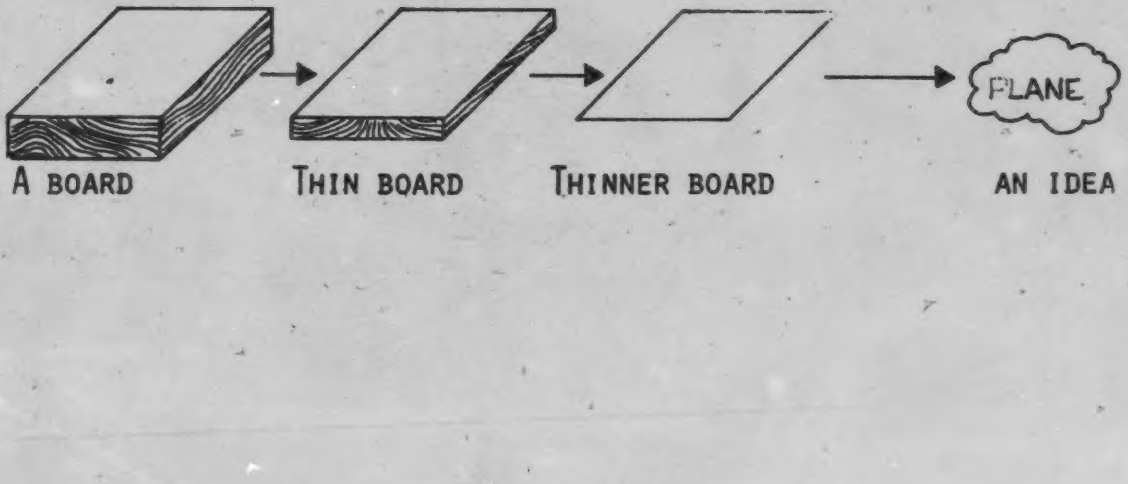
Total Days Participation ____________ out of a possible ____________

Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ____________ (Signature) ____________ (Title)

THESE FIGURES SUGGEST PLANES.




PLANE
A BOARD
THIN BOARD
THINNER BOARD
AN IDEA

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ District: ______________ Area ______________

For Dates ______________ to ______________

Student Name ______________ Last ______________ First Age ______ or Grade ______

Content Area Geometry Skills List No. 57300, 57600, 57900, 58000

Sight & Sound 8.3.4.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to identify a plane.

Activities: What will be done, when, how much (time), by whom?

The teacher should use the attached activity, Three's Company, Four is a Crowd, to help develop the concept of a plane. As the student goes through the activity, he will become aware of the concept that a plane will be determined by three non-collinear points.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify a plane.

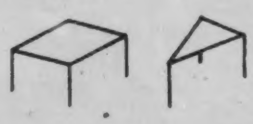
Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________ Signature ______________ Title

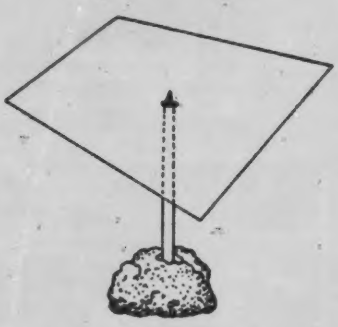
THREE'S COMPANY FOUR IS A CROWD

Make two models; a three-legged table and a four-legged table. Be sure each model has two legs that are not the same length. (The models could be made from cardboard and dowel rods.)



Place the models on your desk and ask: "Why will the four-legged table rock while the three-legged table is steady?"

To help students decide:



1) Stand a dowel rod or pencil with a sharp point upright in clay. Perforate a sheet of tagboard and place the hole over the pencil point. Tilt the tagboard in different directions. Since each position of the tagboard represents a different plane that contains the pencil point, students can see that one point does not determine a unique plane.

2) Repeat the demonstration with a second pencil to show that two points do not determine a unique plane.

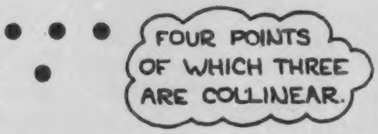
3) Repeat the demonstration with three pencils arranged so that they are not in a straight line. Students can see that three (non-collinear) points do determine a plane. [Will any group of three points determine a plane? Be sure students realize that the three points must be non-collinear.]

4) Repeat the demonstration only this time use four pencils, no three of which are in a straight line. Four points, no three of which are collinear do not always determine a unique plane. Actually four planes are determined, one by each group of three points.

To show that this situation occurs invert the two tables on your desk and place a piece of paper on the three legs of the three-legged table to reinforce that they determine a plane. Demonstrate on the four-legged table that it is possible to support four pieces of paper, (each group of three legs determines a plane.)

Exhibit a model of a tetrahedron . Identify the vertices as four points not on the same plane. Place a piece of paper against each face to demonstrate again that four non-coplanar points determine 4 planes.

Extension: Will any arrangement of four points always determine one plane?



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ (Last) ______________ (First) **Age or Grade** ______________

Content Area Geometry **Skills List No.** 58800, 59100
Sight & Sound 8.3.5.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know the basic definition of complementary angles.

Activities: What will be done, when, how much (time), by whom?

The teacher should use the attached activity, A Complement For You, as a basis for developing the concept of complimentary angles. As the student goes through the activity, he will discover the basic concepts dealing with complementary angles.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify complementary angles using the basic definitions.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ (Signature) ______________ (Title)

A COMPLEMENT FOR YOU

1) Draw a triangle with one right angle.
It can be any size that you want.

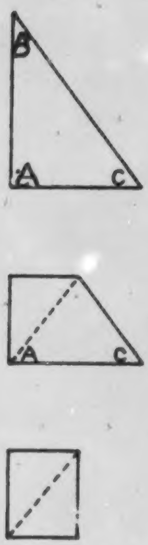
2) Label it BAC with the right angle labeled A.
Carefully cut out the triangle.

3) Fold so that vertex B fits on vertex A.

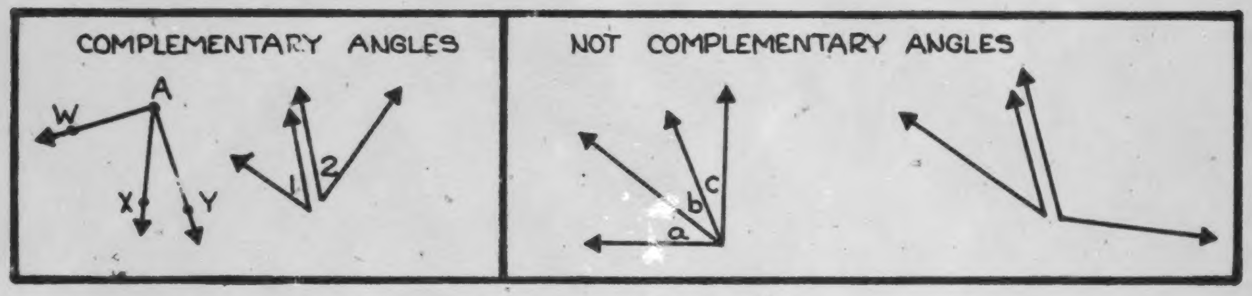
4) Fold so that vertex C fits on vertex A.

5) Did angle B and angle C exactly cover angle A?

6) Try it again with a different right triangle.

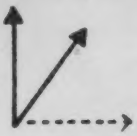


Two angles that will fit together to exactly cover a right angle are called complementary angles.

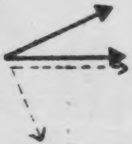

COMPLEMENTARY ANGLES
W
A
X
Y
1
2
NOT COMPLEMENTARY ANGLES
a
b
c

7) Sketch a complementary angle for each of these angles.

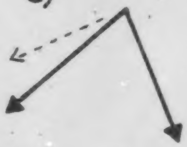
a)



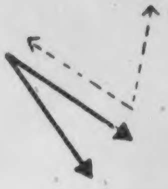
b)



c)



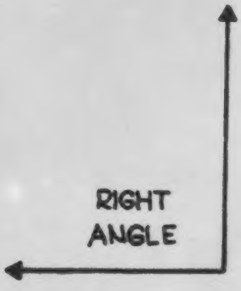
d)

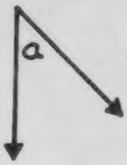


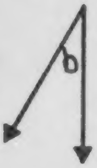
8) Match each angle with its complementary angle. You may cut them out and fit them on the given right angle. Record your answers in the table to the right.
(Angle models can be prepared and stored in an envelope.)

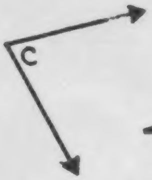
Complementary Angles

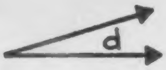
1)	a	g
2)	b	e
3)	c	d
4)	f	h

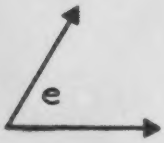

RIGHT ANGLE

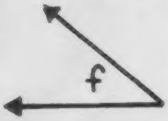


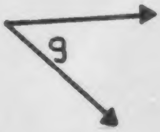


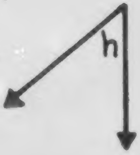












Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ______________________________ **Age** ________
Last First
or
Grade ________

Content Area Geometry **Skills List No.** 58800, 59100
Sight & Sound# 8.3.5.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know the basic definition of obtuse and acute angles.

Activities: What will be done, when, how much (time), by whom?

The teacher should use the attached activity, An Acute Case of Obtusity, to develop the concept of acute and obtuse angles. As the student goes through the activity, she will discover how acute, obtuse, and right angles are related to each other. The student will have a good concept of the terms acute angle and obtuse angle when the activity is completed.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify obtuse and acute angles using the basic definitions.

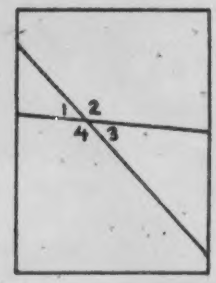
Total Days Participation ____________ out of a possible ____________

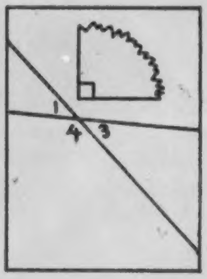
Criterion Attained: Yes ________ No ________ Date ________

Teacher: ______________________________
Signature Title

AN ACUTE CASE OF OBTUSITY

The concept of acute angles being smaller than right angles and obtuse angles being larger than right angles can be demonstrated using paper folding. Have students fold a piece of paper twice to show intersecting lines. You can demonstrate at the overhead using a thin piece of transparency material or wax paper. Unfold the paper and label the angles 1, 2, 3, and 4. Using a right angle model from *Make the Right Fold* (or a corner of a piece of paper) label each angle as smaller than or larger than a right angle.





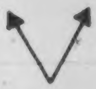
∠ 1 smaller
∠ 2 larger
∠ 3
∠ 4

Repeat with two other lines and ask students if they can find an example where the two lines don't form angles that are smaller than or larger than a right angle.

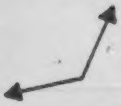
At this time the words acute and obtuse can be introduced. The following exercises are examples of skill building activities that could be used. You may want to have students make a guess about the angle and then check it with a right angle model.

a) Circle the acute (obtuse) angles.

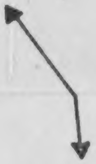
1)



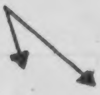
2)



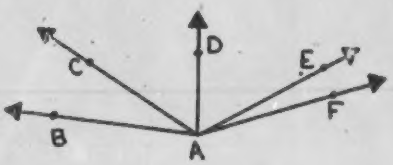
3)



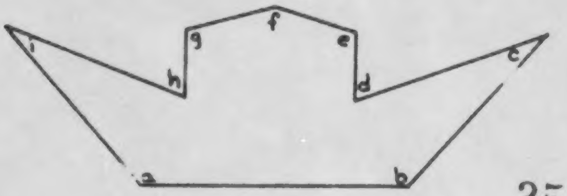
4)



b) Name two acute angles in this figure.
Name two obtuse angles in this figure.



c) In this polygon circle the lettered angles if they are acute angles. Put an X on the letters of obtuse angles.



d) Find examples of angles in your classroom that are either acute or obtuse. Check each with a right angle model.

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ **Age or Grade** ______________
Last **First**

Content Area Geometry **Skills List No.** 58800, 59100
Sight & Sound# 8.3.5.3

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to know the basic definition of a right angle.

Activities: **What will be done when, how much (time), by whom?**

The teacher can use the attached paper folding activity, Make the Right Fold, as an excellent activity for developing the concept of a right angle. As the student goes through the activity, he/she will be developing his own model of a right angle, which will help him/her to secure this concept in his/her own mind.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify right angles by using the basic definitions.

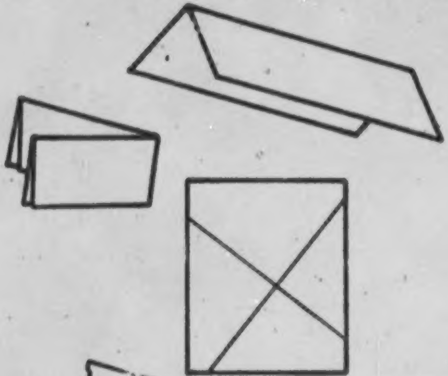
Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature **Title**

MAKE THE RIGHT FOLD

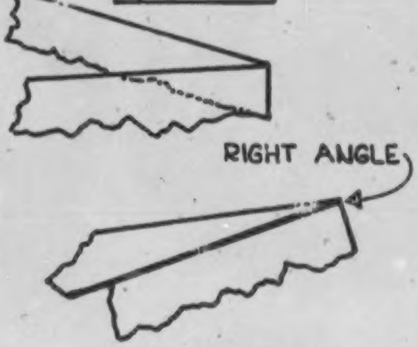
An easily recognized and useful angle is the right angle. Students can make models for right angles by folding paper. Two methods are shown below. These models can be used to determine whether an angle is right, acute, or obtuse. See *An Acute Case of Obtusity*. The models can also be used to sketch a right angle wherever needed.



A) 1) Have students fold and crease a piece of paper. The fold can be made anywhere.

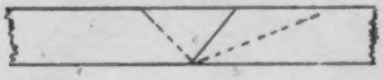
2) Then fold again so the first fold is placed on top of itself.

3) The right angle occurs at the point of intersection of the two folds. The paper could be unfolded to show four right angles at this point.



B) 1) Use a strip of paper with at least one straight edge. Fold the right side down at any angle. Crease.

2) Fold the left side down so the straight edges meet. The angle formed will be a right angle.

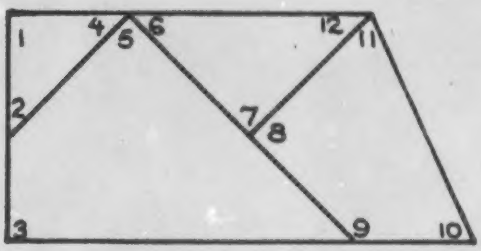


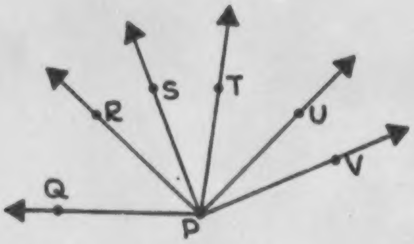
C) Having made models of right angles students can use them to check right angles. Several ideas are given below.

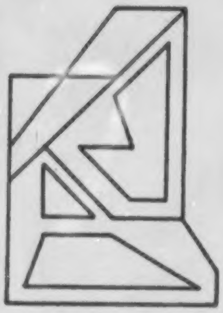
1) Which of these are right angles?

2) Name the right angles in this model.

3) Mark the right angles in this design.







Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ Last ______________ First ______________ **Age** ______ **or Grade** ______

Content Area Geometry **Skills List No.** 58800, 59100

Sight & Sound# 8.3.5.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know the basic definition of an angle.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the activity, Angles, Not Angels (see attached), as a good introductory activity for angles. The student will be able to discover the basic concepts of angles as he works through this exercise. The student will be able to see what a vertex is, the sides are, and how to label and name an angle. The student will discover that the relationship between the number of rays with a common vertex and the number of angles formed is $\frac{N(N-1)}{2}$, where N is the number of rays. Thus, for 3 rays, the number of angles is $\frac{(3)(2)}{2}$ or $\frac{6}{2}$ or 3.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify angles by using the basic definitions.

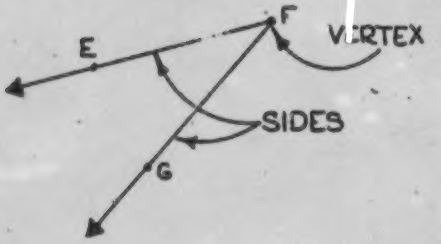
Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

Teacher: ______________ Signature ______________ Title

ANGLES NOT ANGELS

TWO RAYS WITH THE SAME END POINT FORM AN ANGLE



This angle can be called angle EFG or angle GFE. The letter naming the vertex is always in the middle.

∠EFG OR ∠GFE

VERTEX
VERTEX

If there is no confusion the letter naming the vertex can be used alone. ∠F

A) Find some examples of angles in your classroom.

____

____

____

____

____

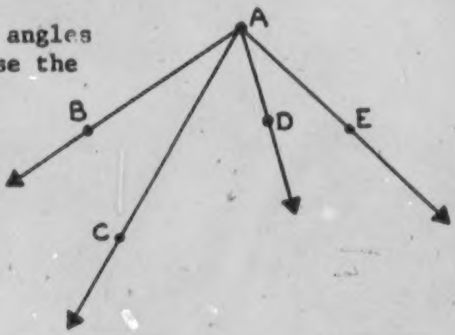
B) Name four different angles in this diagram. Use the 3-letter names.

1) ________________

2) ________________

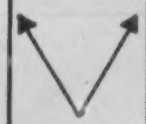
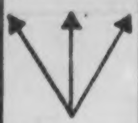
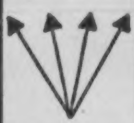
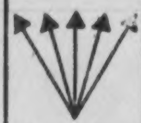
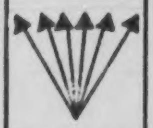
3) ________________

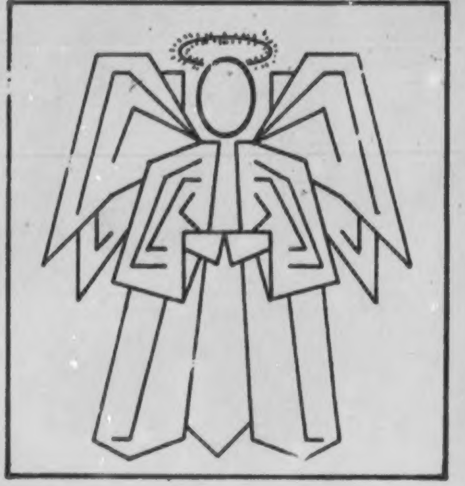
4) ________________



C) How many different angles are formed using these rays?

D) The angel below has been drawn with many angles. Can you draw a simpler angel with fewer angles?

2 RAYS	3 RAYS	4 RAYS	5 RAYS	6 RAYS
				
(1)	3	(6)	(10)	(15)



Predict the number of angles formed using 7 rays. ______
Check your prediction.

Predict the number of angles formed using 10 rays. ______

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ________________

Student Name ____ **Age** ___________
Last First **or**
Grade ___________

Content Area Geometry **Skills List No.** 58800, 59100
Sight & Sound# 8.3.5.5

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to measure angles using a protractor.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should use the attached activities, Ancient Angles, Professional Protractors, and Protractors and Polygons, to develop the concept of angle measurement and using the protractor. As the student works through the activities, he will become comfortable with the protractor, and will be able to read the measure of angles.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

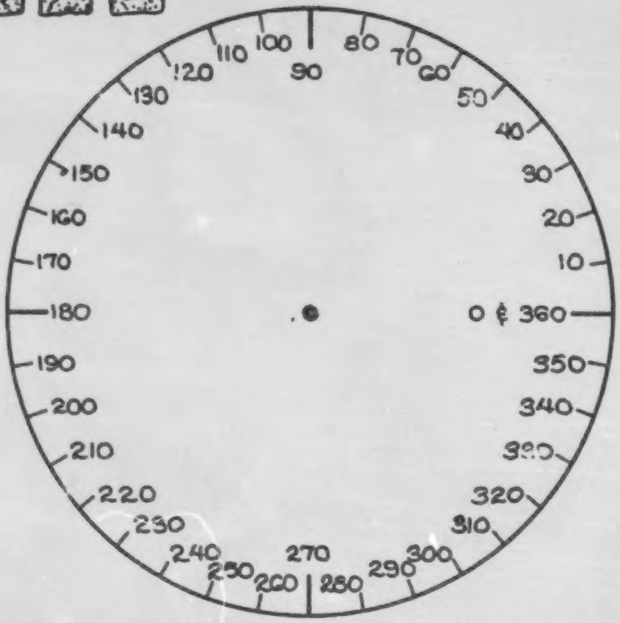
Given a teacher made test, the student will be able to measure angles using a protractor.

Total Days Participation ______________ **out of a possible** __________________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

ANCIENT ANGLES



90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
0 & 360
10
20
30
40
50
60
70
80

A long time ago the Babylonians, who thought there were 360 days in a year, drew an angle that was 1/360 of a circle. This was their unit angle. It is now known that there is a little more than 365 days in a year but the Babylonian unit angle is still used as the basis for measuring angles or turns in a circle. The unit angle has a measure of 1 degree (1°).

Imagine two arrows pointing towards 0°.

Figure 1 shows a counter clockwise turn of 90° or a clockwise turn of 270°.

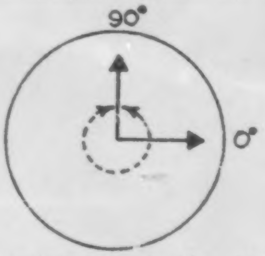


FIGURE 1

Figure 2 shows a counter clockwise turn of 225° or a clockwise turn of 135°.

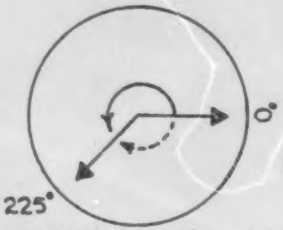
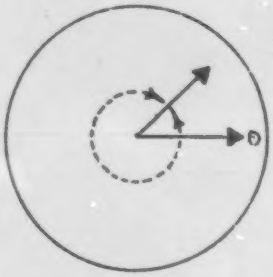
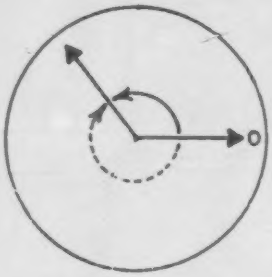
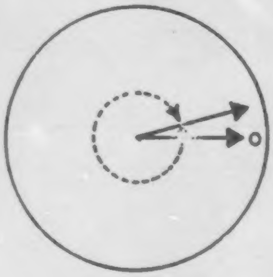


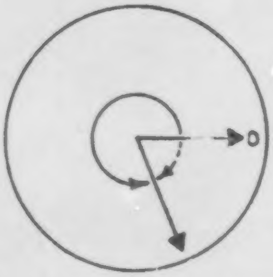
FIGURE 2

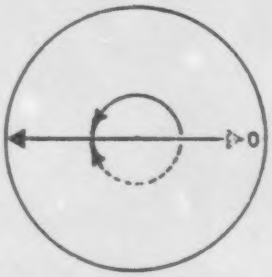
Use the picture at the top as a guide and approximate the amount of turn shown in each figure. Give both a counter clockwise and a clockwise amount.

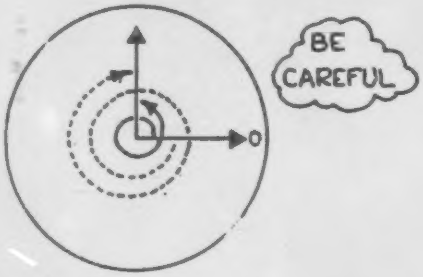






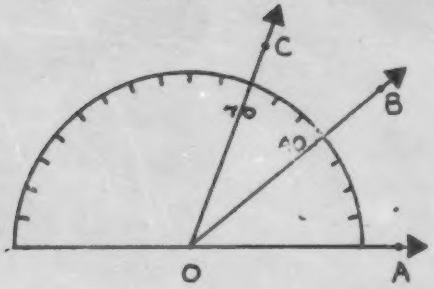




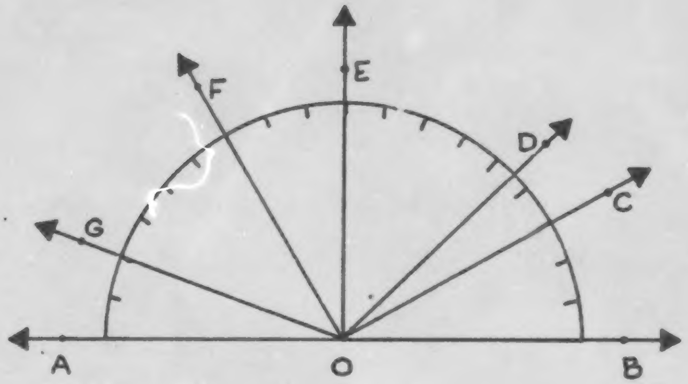


0
BE CAREFUL

PROFESSIONAL PROTRACTORS



∠COA measures 70°. ∠BOA measures 40° so ∠COB measures 70° - 40° or 30°.



∠AOG measures ______°.
∠BOD measures ______°.
∠AOF measures ______°.
∠EOF measures ______°.
∠FOG measures ______°.
∠AOB measures ______°.

The measure of ∠EOF plus the measure of ∠FOG is the same as the measure of ∠ ______ or ______°.

The measure of ∠BOD minus the measure of ∠BOC is the same as the measure of ∠ ______ or ______°.

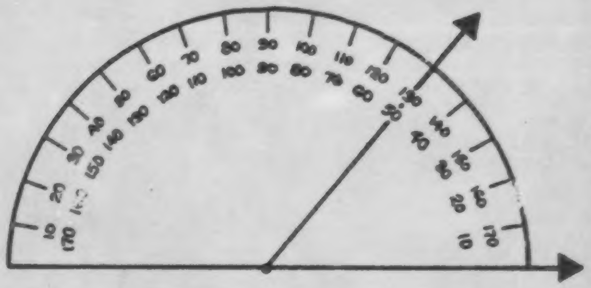
The measure of ∠COF minus the measure of ∠COD is the same as the measure of ∠ ______ or ______°.

The sum of the measures of ∠COD, ∠DOE, and ∠EOF is the same as the measure of ∠ ______ or ______°,

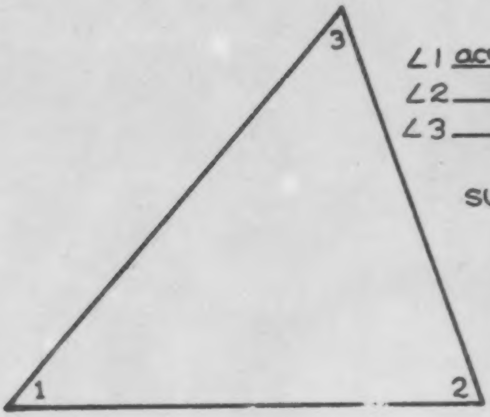
The measure of ∠AOF plus the measure of ∠COF minus the measure of ∠COD is the same as the measure of ∠ ______ or ______°.

PROTRACTORS and POLYGONS

The protractor is a tool used to measure angles. On the protractor to the right one ray of the angle gives two numbers--50 and 130. Which is correct? Since the angle is an acute angle (smaller than a right angle), the correct answer is 50°.

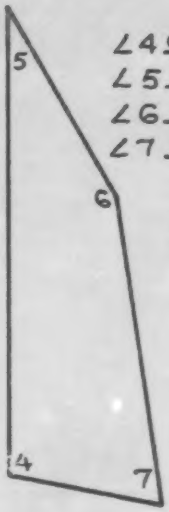


For the polygons below name each angle as acute, right or obtuse. Use a protractor to find the measure of each angle, and then find the sum of the angle measures.



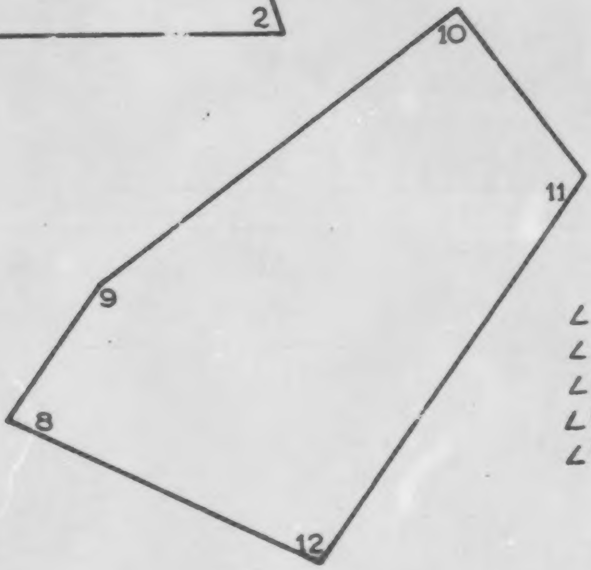
∠1 acute ____ 50°
∠2 ________ ____
∠3 ________ ____

SUM ____



∠4 obtuse ____ ____
∠5 ________ ____
∠6 ________ ____
∠7 ________ ____

SUM ____



∠8 ________ ____
∠9 ________ ____
∠10 right ____ ____
∠11 ________ ____
∠12 ________ ____

SUM ____

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age** ______________
Last First **or**
Grade ______________

Content Area Geometry **Skills List No.** 51303
Sight & Sound# 8.3.7.1

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify a regular tetrahedron and a cube.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, Folding Fun, to introduce the student to the solid objects, a regular tetrahedron, and cube. As the student goes through the steps in building each of these objects, he will discover the attributes that distinguish each of these figures.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify a regular tetrahedron and a cube.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

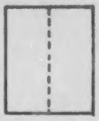
Teacher: ______________ ______________
Signature **Title**

FOLDING FUN

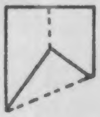
Students will need 8 1/2 x 11 rectangular sheets of paper and scissors. Glue or tape is necessary to secure the solids. Thin, colored transparency material can be used on an overhead projector as a demonstration model.

A regular tetrahedron

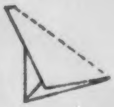
a) Fold a piece of paper lengthwise.



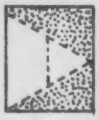
b) Fold a bottom corner to the center line so the crease goes through the other bottom corner.



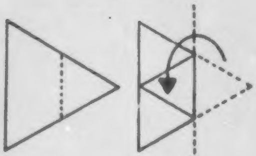
c) Fold the right edge over so it is on top of the crease in (b).



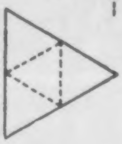
d) Unfolding reveals a triangle. Cut out the unshaded triangle.



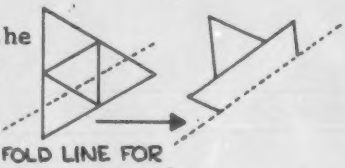
e) Fold each vertex to the midpoint of the opposite side.



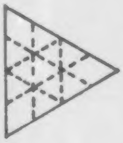
f) You should have this.



g) Fold each edge to the parallel fold line. (It looks like a boat.)

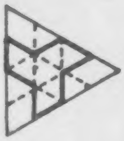


h) Unfolding reveals this.



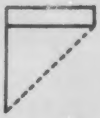
i) Mark the solid lines as shown and then cut on the solid lines.

j) Fold the figure to get a tetrahedron.

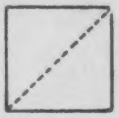


A cube

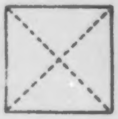
a) Fold the bottom edge over to the side edge and crease.



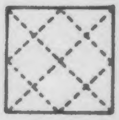
b) Cut off the excess at the top to get a square.



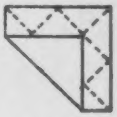
c) Fold the other diagonal.



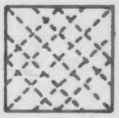
d) Fold each corner to the center and crease.



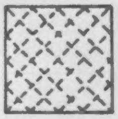
e) Fold each corner to the third line.



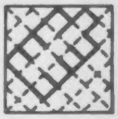
f) You should have this.



g) Fold each corner to the first line to get this.



h) Mark the solid lines as shown and then cut on the solid lines.



i) Fold the figure to get a cube.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______
Last **First** **or**
Grade ______

Content Area Geometry **Skills List No.** 51303
Sight & Sound# 8.3.7.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to identify several geometric solids.

Activities: What will be done, when, how much (time), by whom?

The attached activity, Polyhedra, is a good descriptor of the more common polyhedra. The teacher can use the figures on the attached page, or copy similar nets from the sources recommended in the activity. In either case, the student will discover the unique attributes that each polyhedra possesses, and those things that make it similar to other polyhedra.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify the more common types of polyhedra, as shown in the activity Polyhedra.

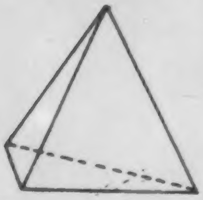
Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ____
Signature **Title**

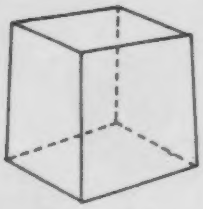
POLYHEDRA

Two types of polyhedra, regular and semi-regular, can be described by the arrangement of the faces at each vertex. In each regular polyhedra all the faces are congruent and the same number of faces meet at each vertex. The five regular convex polyhedra are these:



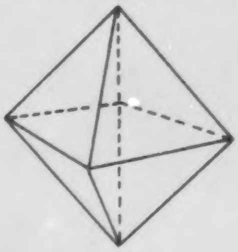
Tetrahedron
3-3-3

3 triangles at each vertex



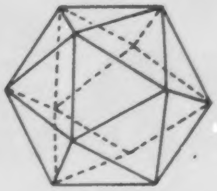
Cube (hexahedron)
4-4-4

3 squares at each vertex



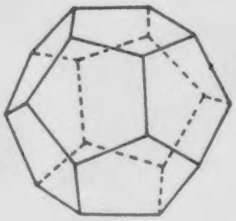
Octahedron
3-3-3-3

4 triangles at each vertex



Icosahedron
3-3-3-3-3

5 triangles at each vertex

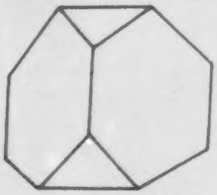


Dodecahedron
5-5-5

3 pentagons at each vertex

They are often referred to as the Platonic solids, named after Plato (350 B.C.), a Greek philosopher, who studied the solids in detail and showed how to construct them in his book Timaeus. The Greeks believed the five solids corresponded to the following elements of the universe: (1) Tetrahedron-fire (2) Hexahedron-earth (3) Octahedron-air (4) Icosahedron-water (5) Dodecahedron-universe.

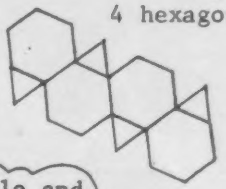
Another type, semi-regular polyhedra, are solids with faces in the shape of more than one kind of regular polygon, yet the arrangement of faces at each vertex is the same. Among these are the thirteen Archimedean solids identified by the Greek mathematician Archimedes. Most of them can be obtained from the five regular polyhedra by the appropriate cutting of corners. Each Archimedean solid is shown below with the net from which it can be made.



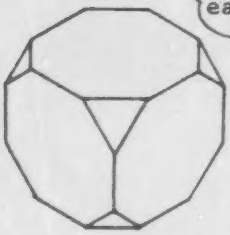
Truncated Tetrahedron
3-6-6

1 triangle and 2 hexagons at each vertex

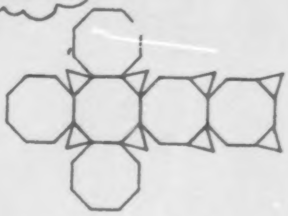
4 triangles
4 hexagons



"Truncated" means "cut off." The truncated tetrahedron looks like a regular tetrahedron whose corners were cut off 1/3 of the way along each side.



Truncated Cube
3-8-8

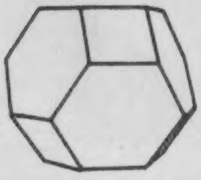


8 triangles
6 octagons

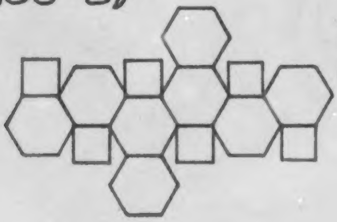
The truncated cube is a cube with the corners cut off 1/3 of the way along each side.

POLYHEDRA

(PAGE 2)

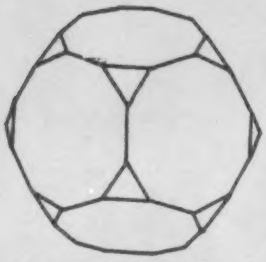


Truncated Octahedron
4-6-6

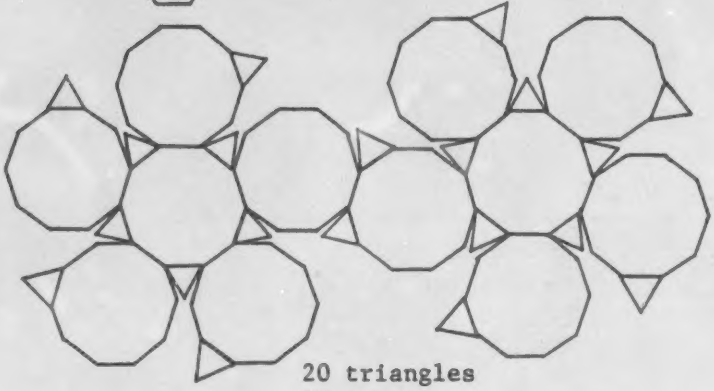


6 squares
8 hexagons

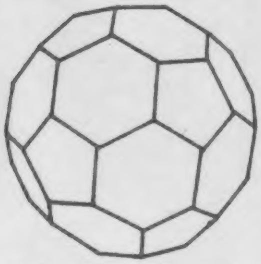
How is the truncated octahedron related to the regular octahedron?



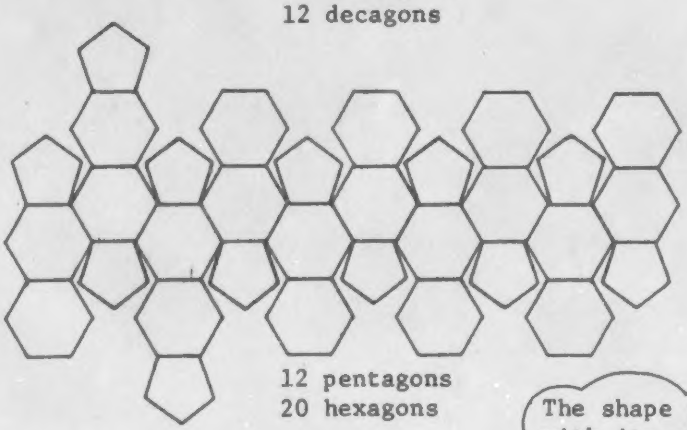
Truncated Dodecahedron
3-12-12



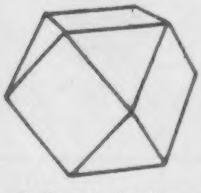
20 triangles
12 decagons



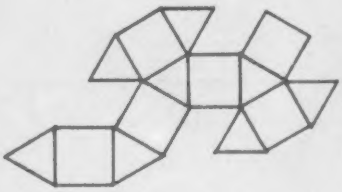
Truncated Icosahedron
5-6-6



12 pentagons
20 hexagons

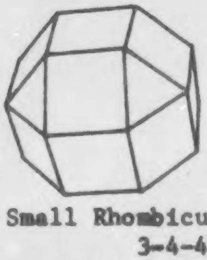


Cuboctahedron
3-4-3-4

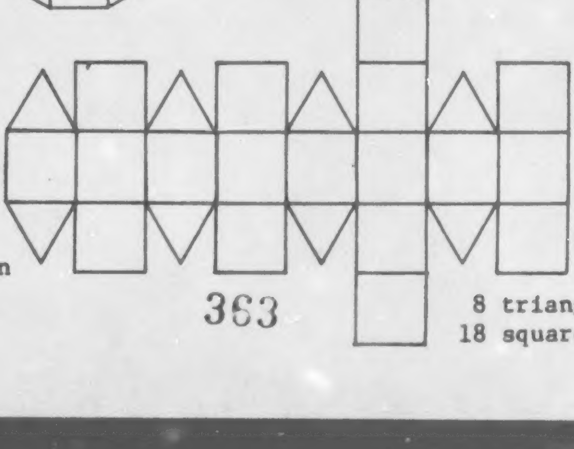


8 triangles
6 squares

The shape is a cube with its corners cut off at the centers of each edge or an octahedron with its corners cut off at the centers of each edge.



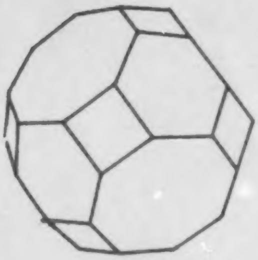
Small Rhombicuboctahedron
3-4-4-4



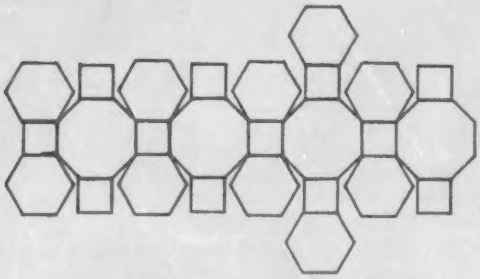
8 triangles
18 squares

This solid is a cuboctahedron with its corners cut off at the centers of each edge.

POLYHEDRA (PAGE 3)

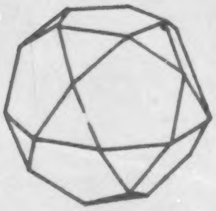


Great Rhombicuboctahedron
or Truncated Cuboctahedron
4-6-8

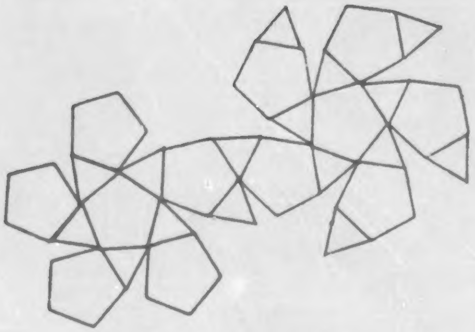


12 squares
8 hexagons
6 octagons

This shape is formed by cutting off the corners of the cuboctahedron 1/3 of the way along each side.

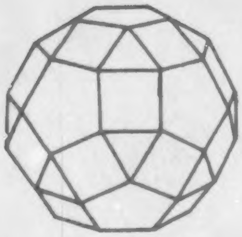


Icosidodecahedron
3-5-3-5

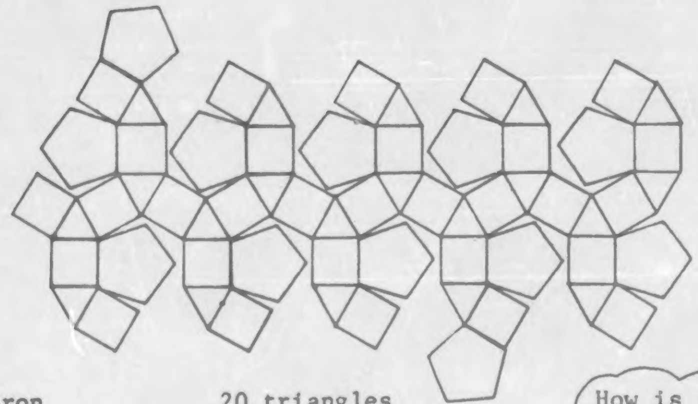


20 triangles
12 pentagons

This shape is formed by cutting off the corners of the dodecahedron 1/2 of the way along each side.



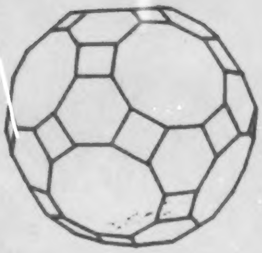
Small Rhombicosidodecahedron
3-4-5-4



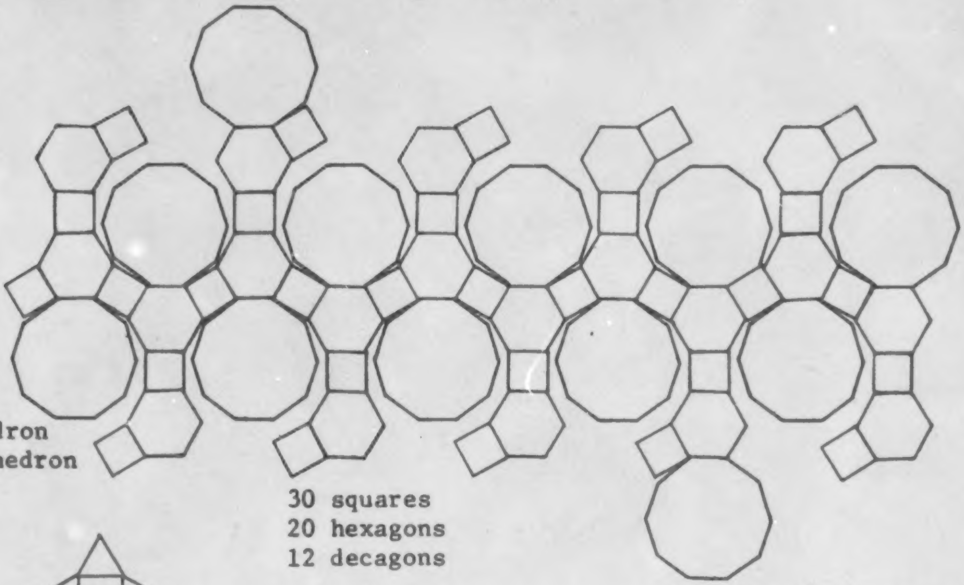
20 triangles
30 squares
12 pentagons

How is this shape related to the icosidodecahedron?

POLYHEDRA (PAGE 4)

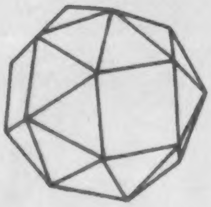


Great Rhombicosidodecahedron
or Truncated Icosidodecahedron
4-6-10

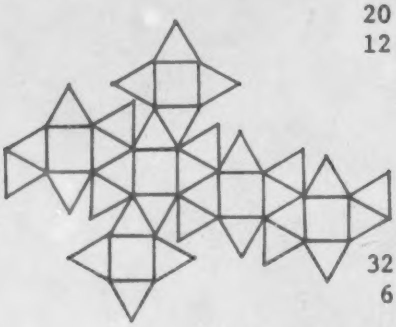


30 squares
20 hexagons
12 decagons

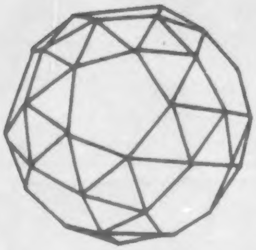
How is this shape related to the icosidodecahedron?



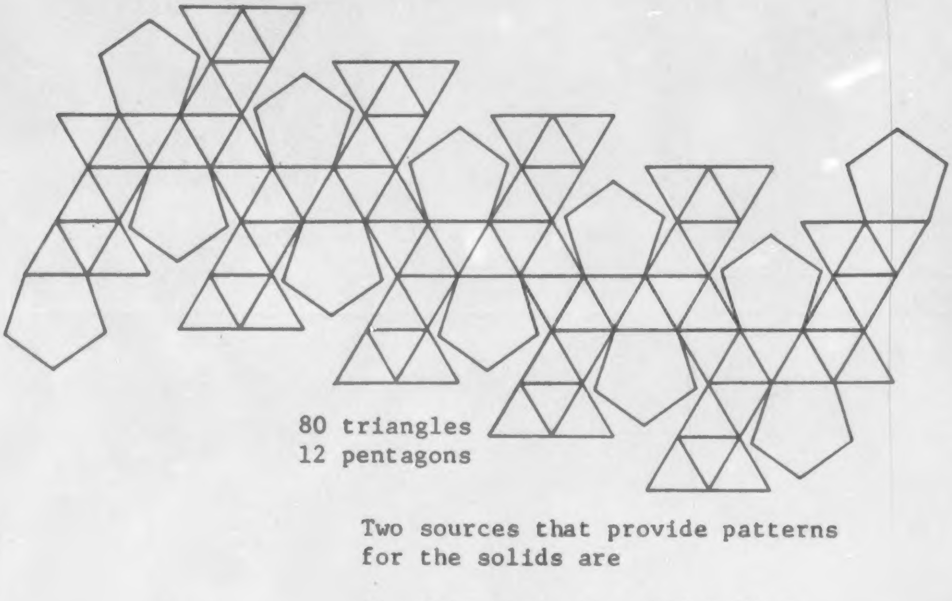
Snub Cube
3-3-3-3-4



32 triangles
6 squares



Snub Dodecahedron
3-3-3-3-5



80 triangles
12 pentagons

Two sources that provide patterns for the solids are

1) Math Projects: Polyhedral Shapes, Bassetti, Ruchlis, Malament, Book-Lab, Inc., 1968

2) Geo-ring Polyhedra, Linda Silvey, Creative Publications, Inc., 1972

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ District: ______________ Area ______________

For Dates ______________ to ______________

Student Name ______________ Age ______________
Last First or
Grade ______________

Content Area Geometry Skills List No. 51303
Sight & Sound# 8.3.7.3

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to make nets of solid objects.

Activities: What will be done, when, how much (time), by whom?

The teacher will use the attached activity, Solids, Shells, and Nets, to help the student make nets of various objects. As the student goes through the activity, the teacher will be helping the student discover the various attributes of a net. The student will become well acquainted with the concept of a net by the time he has finished with this exercise. The teacher can tell the student that this exercise, in addition to being helpful in identifying shapes, is an introduction to the concept of surface area.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

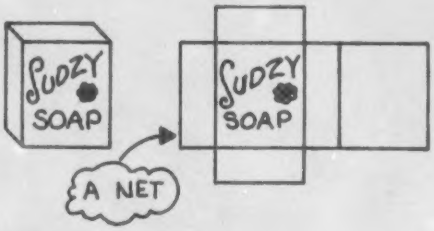
Given a teacher made test, the student will be able to make nets of solid objects.

Total Days Participation ______________ out of a possible ______________

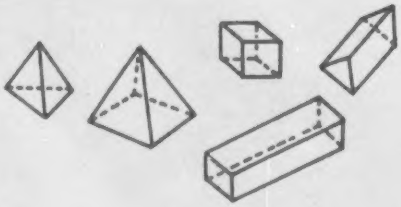
Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________________________
Signature Title

SOLIDS, SHELLS and NETS



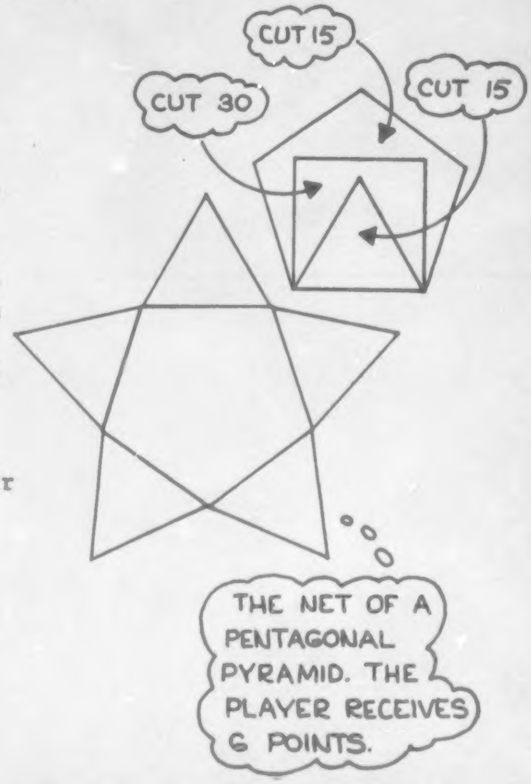
1) Provide each student with a box. (Students could help collect cereal, soap, rice, etc., boxes prior to the activity.) Each student cuts along as few edges as possible so the container can lay flat in one piece. Students then compare nets. How do they differ? How are they the same? Have students sketch their nets and then tape the containers back together. By cutting the container's edges again but varying the cuts students see if they can make a differently shaped net.



2) Collect enough solid polyhedra for each member of the class to have one. The collection should include tetrahedra, square pyramids, cubes, rectangular prisms and triangular prisms.

Each student chooses a solid and makes a net by rolling the solid from face to face on poster paper and tracing each face. Each face should be marked after it is traced to avoid tracing the same face twice. After drawing the net, students describe (name) the faces and then try to assemble the net into the shell of the solid. Students trade to get a different solid and repeat the activity. Compare the nets of each solid by having students sketch their nets on the chalkboard. Is it possible to have more than one net for each solid?

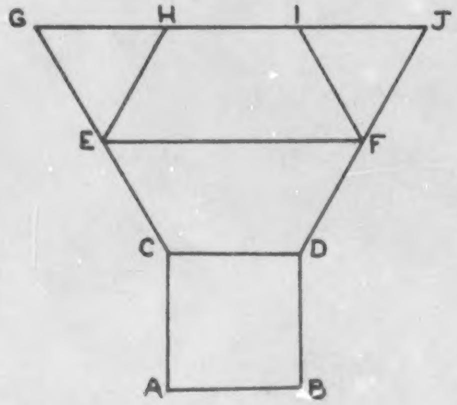
3) Play this game in pairs. Make a die with the numbers 3, 3, 4, 4, 4, 5 on the faces. Use the patterns to the right to make a set of triangles, squares and pentagons. Each player rolls the die in turn and takes a shape with the same number of edges as the number rolled. She then tries to arrange her shapes into sets that will form the net of a solid shape. When a net is completed, the player receives a score equal to the number of plane shapes used in the net.
The pieces in the completed net are then returned to the pool. At the end of a fixed time period the scores are totaled. The number of unused shapes that each player holds is deducted from her score.


CUT 15
CUT 30
CUT 15
THE NET OF A PENTAGONAL PYRAMID. THE PLAYER RECEIVES 6 POINTS.

SOLIDS, SHELLS, and NETS
(CONTINUED)

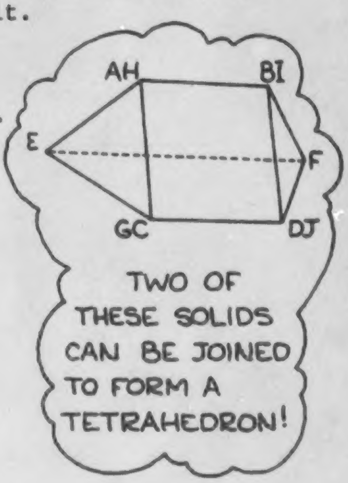
4) Provide the students with nets for various polyhedra. The student

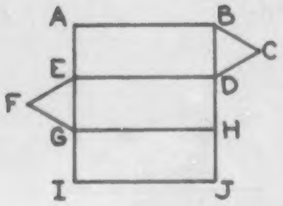
a) guesses how many cuts were made to form each net from the shell.
b) lists the edges that will be joined together when each net is assembled, and
c) checks his answers by cutting out the net and assembling it.


G
H
I
J
E
F
C
D
A
B

a) Number of cuts = ______.

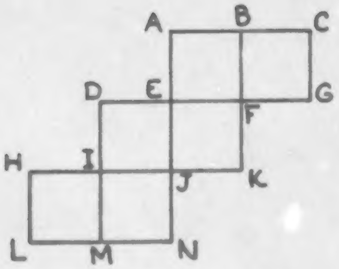
b) $\overline{GE}$ joins ______.
$\overline{CA}$ joins ______.
$\overline{AB}$ joins ______.
$\overline{DB}$ joins ______.
$\overline{DF}$ joins ______.
$\overline{FJ}$ joins ______.
$\overline{HI}$ joins ______.


AH
BI
E
F
GC
DJ
TWO OF THESE SOLIDS CAN BE JOINED TO FORM A TETRAHEDRON!


A
B
C
E
D
F
G
H
I
J

a) Number of cuts = ______.

b) $\overline{AB}$ joins ______.
$\overline{AE}$ joins ______.
$\overline{FG}$ joins ______.
$\overline{IJ}$ joins ______.
$\overline{JH}$ joins ______.
$\overline{HD}$ joins ______.


A
B
C
D
E
G
F
H
I
J
K
L
M
N

a) Number of cuts = ______.

b) $\overline{AE}$ joins ______.
$\overline{DI}$ joins ______.
$\overline{HL}$ joins ______.
$\overline{LM}$ joins ______.
$\overline{MN}$ joins ______.
$\overline{NJ}$ joins ______.
$\overline{KF}$ joins ______.
$\overline{CG}$ joins ______.
$\overline{BC}$ joins ______.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________________ **District:** ____________________ **Area** ____________

For Dates ____________ to ____________

Student Name ______________________________________ **Age** ________
Last **First** **or**
Grade ________

Content Area Geometry **Skills List No.** 51300
Sight & Sound# 8.3.7.4

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to identify prisms and pyramids.

Activities: What will be done, when, how much (time), by whom?

The teacher should have on hand some models of prisms and pyramids. This will help in the discovery process that will take place in the attached activity, Prisms and Pyramids. As the student goes through the activity, she will discover the attributes of pyramids and prisms.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify pyramids and prisms.

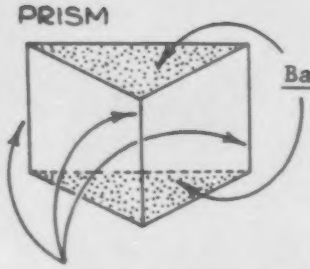
Total Days Participation ____________ out of a possible ____________

Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ______________________________________
Signature **Title**

PRISMS & PYRAMIDS

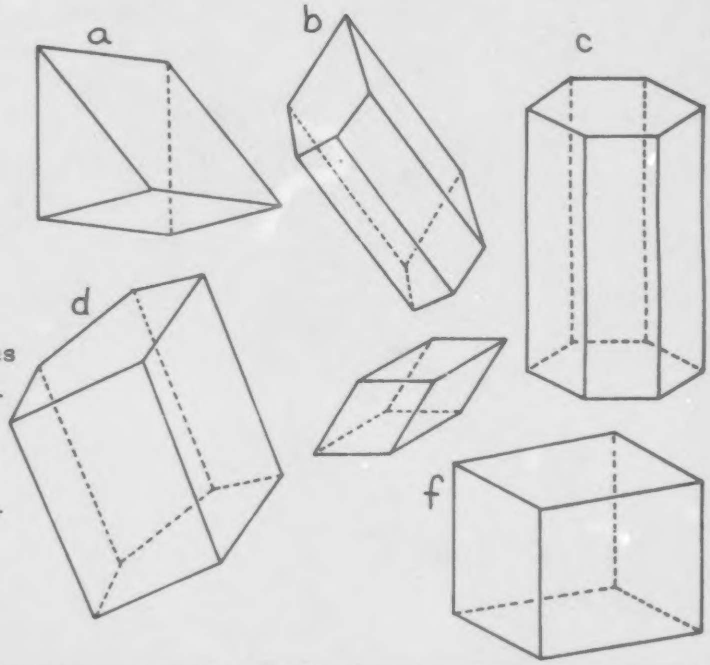
1) PRISM



Bases are parallel and congruent.

Lateral edges are parallel and the same length.

2) Shade the bases of these prisms.



3) What shapes can be used for the bases of prisms? ____________________

4) What shape do the rest of the faces have? ____________________

5) Give a name to each prism in (2) from the shape of its base.

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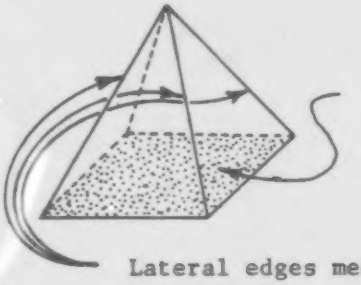
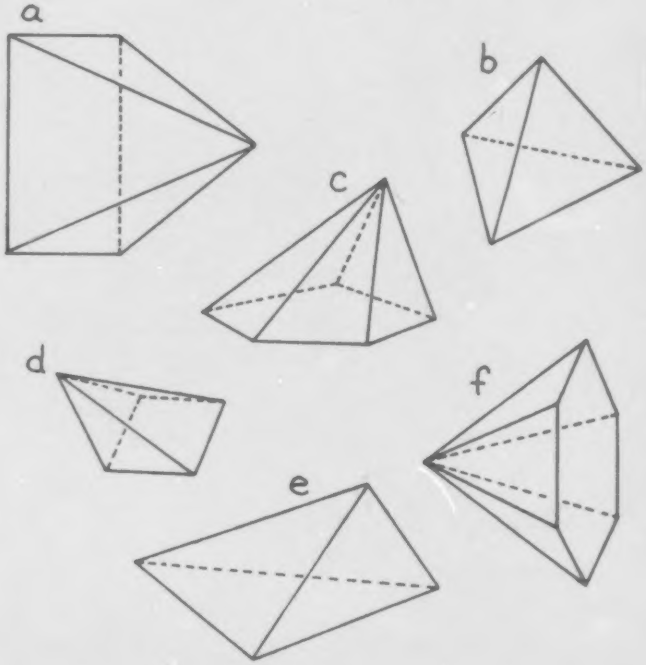
6) PYRAMID



Base

Lateral edges meet at one point.

7) Shade the base of each pyramid.



8) What shapes can be used for the bases of the pyramids? ____________________

9) What shape do the rest of the faces have? ____________________

10) Give a name to each pyramid in (7).

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: __________ **District:** __________ **Area** __________

For Dates __________ **to** __________

Student Name __________ **Last** **First** **Age** __________ **or Grade** __________

Content Area Geometry **Skills List No.** 51303
Sight & Sound# 8.3.7.5

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to find the volume of rectangular prisms.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that a rectangular prism is a solid figure that has all right angles, and each pair of opposite sides are parallel and congruent (the same size). A box is a good example of a prism. The teacher can use the attached activity, Volume With Cubes, to help the student familiarize himself with the idea of volume. As the student builds the various models, he will become able to find the volume of a prism.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the volume of rectangular prisms.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** __________ **No** __________ **Date** __________

Teacher: __________ **Signature** **Title**

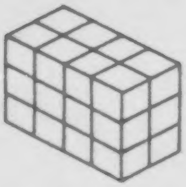
VOLUME WITH CUBES

Materials Needed: A set of at least 100 cubes

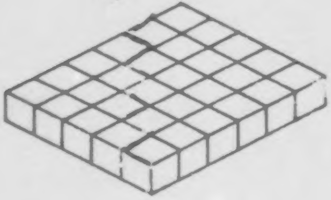
Activity:

1) Build each of these models. Record the number of cubes needed for each model. Record the length, width and height below each model.

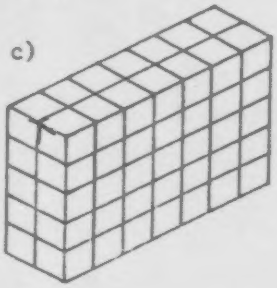
a)



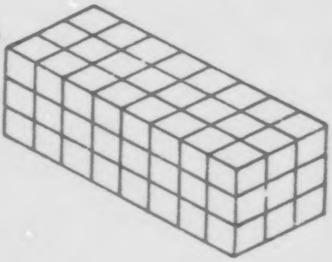
b)



c)



d)



2) The dimensions of four models are given below. Build each model and record the number of cubes needed.

	LENGTH	WIDTH	HEIGHT	NUMBER
a	4	2	4	
b	3	5	2	
c	5	7	1	
d	8	2	3	

3) The number of cubes needed to build a box model are given below. Record possible dimensions for each model, then build the model.

	CUBES	LENGTH	WIDTH	HEIGHT
a	60			
b	36			
c	100			
d	78			

Compare your models with a friend's. Are they the same or different?

4) The number of cubes needed to build a box model are given below. Use the clues to help you find the dimensions. No models can have a dimension of 1 unit. Build each model.

	Length	Width	Height
a) 64 cubes (all dimensions the same)	______	______	______
b) 64 cubes (all dimensions different)	______	______	______
c) 36 cubes (all dimensions different)	______	______	______
d) 48 cubes (two dimensions the same)	______	______	______

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ to ______________

Student Name ____ **Age** ____________
Last First or
Grade ____________

Content Area Geometry **Skills List No.** 51303
Sight & Sound# 8.3.7.6

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to discover the formula for finding the volume of a prism and solve problems dealing with prisms.

Activities: What will be done, when, how much (time), by whom?

The teacher should use the attached activity, Layer by Layer, to help the student discover the formula for the volume of a rectangular prism. As the student works through the activity, the teacher will be able to guide the student to the formula for the volume of a prism, $V = l \cdot w \cdot h$, or volume equals length times width times height. After the student feels comfortable with the formula, the activity, The Daring Young Man, is a good activity to check the student's ability to work problems dealing with the volume of prisms.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

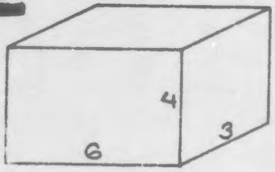
Given a teacher made test, the student will be able to determine the volume of a prism using the formula.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ____
Signature Title

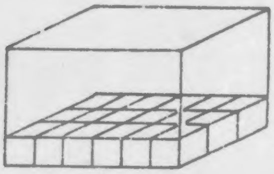
LAYER UPON LAYER



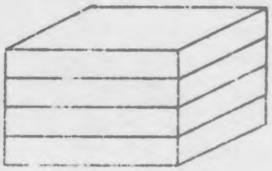
A) How many unit cubes would be needed to fill this box?

To find out:

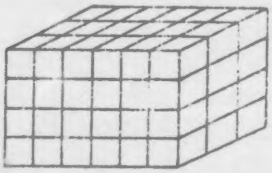
1) How many unit cubes would be needed to cover the base? ______



2) How many layers would it take to fill the figure? ______



3) The figure has a volume of ______ cubic units.

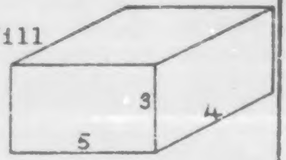


B) 1) How many unit cubes would cover the base? ______

2) How many layers to fill the figure? ______

3) The volume is ______

______

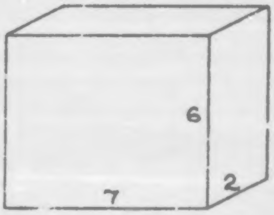


C) 1) Base ______

2) Layers ______

3) Volume ______

______

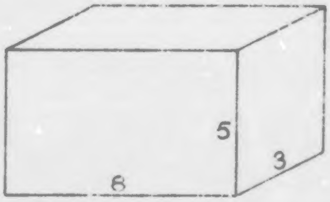


D) 1) Base ______

2) Layers ______

3) Volume ______

______

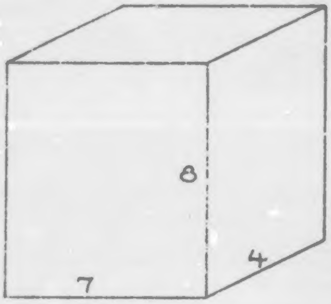


E) 1) Base ______

2) Layers ______

3) Volume ______

______

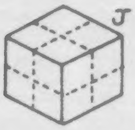


Did you discover a rule for finding the volume? ______

______

THE DARING YOUNG MAN

Find the volume of each figure. Write the letter above the correct answers in the code below.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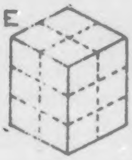
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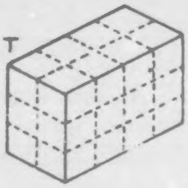
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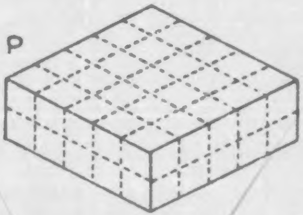
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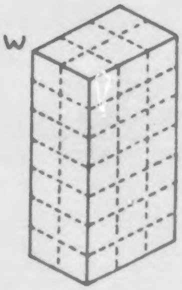
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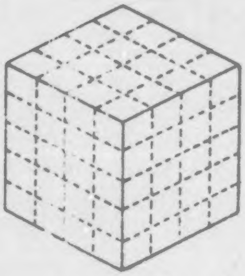
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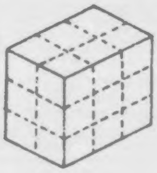
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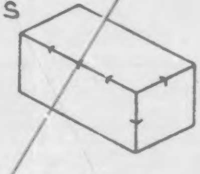
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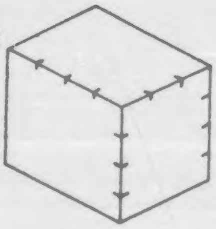
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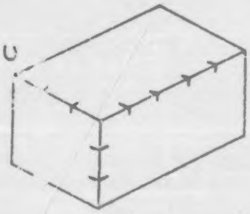
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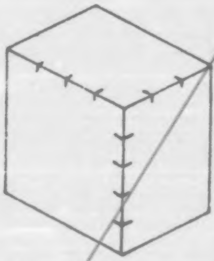
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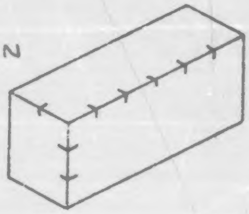
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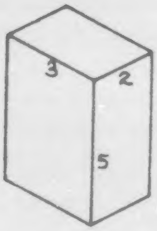
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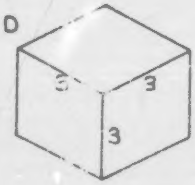
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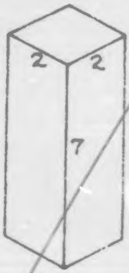
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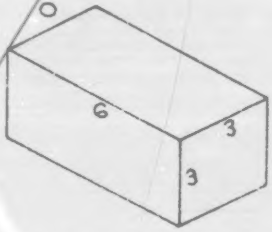
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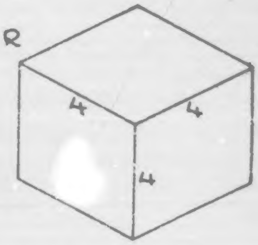

R

WHAT IMPORTANT EVENT HAPPENED IN 678 B.C. ?

12 45 28 60 80 27   8 54 80 36 12 27   24 18 12

28 80 64 28 45 16   42 80 24 18   18 80 16

24 64 30 50 12 48 54 80 27   30 28 24.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______ **District:** ______ **Area** ______

For Dates ______ **to** ______

Student Name ______ **Age** ______
Last **First** **or**
Grade ______

Content Area Geometry **Skills List No.** 51303
Sight & Sound# 8.3.7.7

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to determine the volume of a cube.

Activities: What will be done, when, how much (time), by whom?

The teacher will note to the student that a cube is a rectangular solid object that has all of its sides the same length. The teacher will point out that a cube is a special case of a rectangular prism. The formula for the volume of a prism is $V = l \cdot w \cdot h$. Since the length, width, and height are the same and indistinguishable, they are simply called sides. This changes the formula to $V = s \cdot s \cdot s$. or $V = s^3$. The teacher should give the student some problems to do finding the volume of a cube.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to determine the volume of cubes.

Total Days Participation ______ **out of a possible** ______

Criterion Attained: Yes ______ **No** ______ **Date** ______

Teacher: ______
Signature **Title**

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ Last ______________ First **Age** ______ or **Grade** ______

Content Area Geometry **Skills List No.** ______________

Sight & Sound# 8.3.8

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to determine the volume of a cylinder.

Activities: What will be done, when, how much (time), by whom?

The teacher should use the attached activity, Volume of a Cylinder, to help the student to find the volume of a cylinder. The student will discover that a cylinder is the mathematical name for a can. As the student goes through the activity, he will become able to determine the volume of a cylinder.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

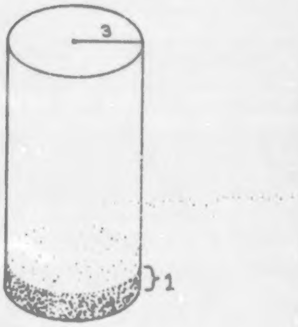
Given a teacher made test, the student will be able to determine the volume of cylinders.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________ Signature ______________ Title

Volume of a cylinder



The layer approach as described in *Layer Upon Layer* for rectangular prisms can be used to develop the formula for the volume of a cylinder. Consider a layer of sand 1 cm deep in the bottom of a cylinder of radius 3 cm. The volume of sand is $\pi \times (3\,\text{cm})^2 \times 1\,\text{cm} = 9 \times \pi\,\text{cm}^3 \approx 28\,\text{cm}^3$.

Students could check this value by measuring the sand.

If four more layers of sand are added to the cylinder so the height of the sand is 5 cm, the volume of sand is

$$\pi \times (3\,\text{cm})^2 \times 5\,\text{cm} \approx 140\,\text{cm}^3.$$

Students could also check this value by measuring the sand.

If the height of the cylinder is 20 cm, then when full the cylinder can hold $\pi \times (3\,\text{cm})^2 \times 20\,\text{cm} \approx 565\,\text{cm}^3$.
The general formula for the volume of a cylinder of radius r and height h is $\pi \times r^2 \times h$ or $B \times h$ where B is the area of the base.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________________ **Age** __________
Last First
or
Grade __________

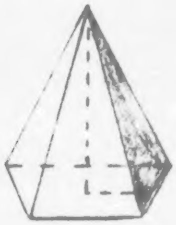
Content Area Geometry **Skills List No.** __________
Sight & Sound# 8.3.9

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to use the formula to determine the volume of a rectangular pyramid.

Activities: **What will be done, when, how much (time), by whom?**

The teacher will note to the student that a rectangular pyramid is a solid object that has a rectangle for a base, and triangles that meet at a point for sides. As the picture points out, the length and width of the pyramid are the sides of the rectangle, and the height is the perpendicular distance for the top to the base. The formula for the volume is $V = 1/3 \cdot l \cdot w \cdot h$ or volume equals 1/3 times length times width times height.



Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to determine the volume of rectangular pyramids.

Total Days Participation __________ out of a possible __________

Criterion Attained: Yes __________ No __________ Date __________

Teacher: ______________________________
Signature Title

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ ______________ **Age** ______________
Last First
or
Grade ______________

Content Area Geometry **Skills List No.** ______________
Sight & Sound# 8.3.10

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to determine the volume of a cone.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should use the attached activity, Volume of a Cone, to help the student find the volume of a cone. The student will be able to see the relationship between the volume of a cone, and the volume of a cylinder as she goes through the activity.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to determine the volume of cones.

Total Days Participation ______________ **out of a possible** ______________

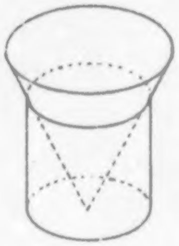
Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature Title

Volume of a Cone

1) Procedure for making a cone of same radius and height as a cylinder:

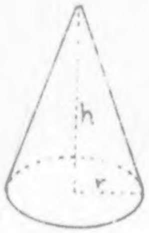
   Find a can from which the top has been cut. Roll a piece of thin cardboard to make a cone. Put a small piece of tape at the tip of the cone to maintain the shape. Place the cone in the can so that the tip touches the base. Spread out the cone to fill out the can at the top and fasten on the inside with tape.



   Mark the cone with a pencil around the top of the can. Remove the cone. Tape the seam outside securely and cut along the mark.

2) Have students guess how many conesful of sand, cornmeal, etc., would be needed to fill the can. Demonstrate by filling the can.
   Since three conesful are needed the volume of the cone is one-third the volume of the cylinder.

The general formula for the volume of a cone of radius r and height h is $\frac{1}{3} \times \pi \times r^2 \times h$ or $\frac{1}{3} \times B \times h$ where B is the area of the base.



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ________

For Dates __________ to __________

Student Name ______________________________ **Age** ________
Last First or
Grade ________

Content Area Geometry **Skills List No.** ________
Sight & Sound# 8.3.11

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to determine the volume of a sphere.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should use the attached activity, Volume of a Sphere, to help the student find the volume of a sphere. The student will see that a sphere is the mathematical name for a ball. As the student goes through the activity, he will see the relationship between a sphere and a cylinder.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

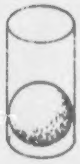
Given a teacher made test, the student will be able to determine the volume of spheres.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: **Yes** ________ **No** ________ **Date** ________

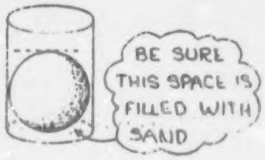
Teacher: ______________________________
Signature Title

Volume of a Sphere

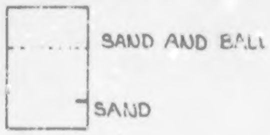


Roll a double thickness of transparency plastic into a cylinder so that a slick surfaced ball will fit inside. Fasten the plastic with tape to maintain the shape.

Hold the base of the cylinder snugly against a table. Place the ball inside and pour enough sand (or cornmeal) to just cover the ball. You may need to squeeze the cylinder so the sand fills the space between the sphere and the base of the cylinder.

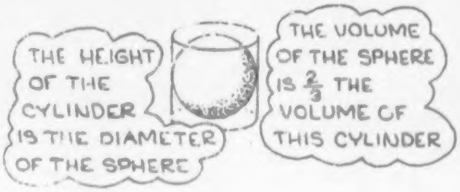

BE SURE THIS SPACE IS FILLED WITH SAND

Mark the height of the sand on the cylinder. Dump out the sand and ball and pour the sand back into the cylinder. Mark the height of the sand on the cylinder and compare the height of the two marks. The second mark should be about one-third as high as the first mark. Thus the volume of a sphere is two-thirds the volume of a cylinder that just contains it.


SAND AND BALL
SAND

The generalized formula for the volume of a sphere of radius r is

$$\frac{2}{3}\underbrace{\left[\pi \times r^2 \times 2r\right]}_{\text{the volume of a cylinder just containing it.}} = \frac{4}{3} \times \pi \times r^3$$


THE HEIGHT OF THE CYLINDER IS THE DIAMETER OF THE SPHERE
THE VOLUME OF THE SPHERE IS $\frac{2}{3}$ THE VOLUME OF THIS CYLINDER

BEST COPY AVAILABLE

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ **to** __________

Student Name ______________________________ **Age** ________
Last **First** **or**
Grade ________

Content Area Geometry **Skills List No.** 48000
Sight & Sound# 8.3.12.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the area of polygons by counting squares and half squares.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activities, Small Squares, and Half Squares, to introduce the idea of area. Area can be thought of as the room inside a two-dimensional object. The activities call for geoboards, grid paper will also work. If the teacher wishes to use geoboards, they can be purchased through a supply company; or made by the teacher. The geoboard simply consists of a square piece of plywood with a series of nails all equally spaced in rows and columns. Rubber bands are then used to string along the geoboard. As the student goes through the geoboard activities, he will become acquainted with the idea of area being represented by a square unit, and the method of counting to produce a numerical statement to represent area.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the area of a polygon by counting squares.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: ______________________ ______________________
Signature **Title**

SMALL SQUARES

Materials Needed: Geoboard, rubber bands, dot paper

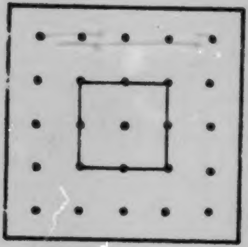
Call the smallest square on the geoboard one unit of area.

It is also called 1 square unit

Activity:

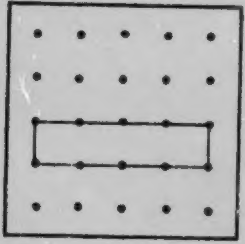
1) Make these figures on your geoboard and find the number of square units in the area of each figure.

a)



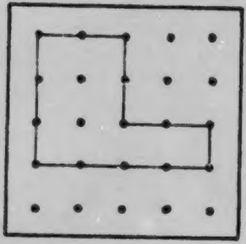
_____ square units

b)



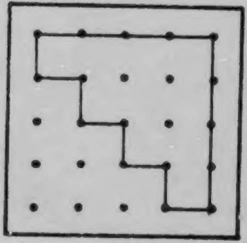
_____ square units

c)



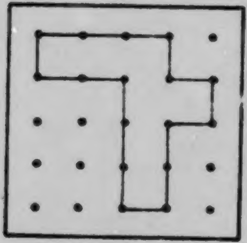
_____ square units

d)



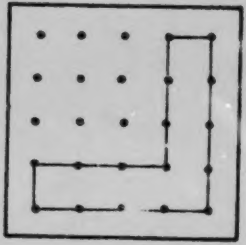
_____ square units

)



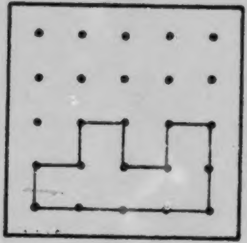
_____ square units

f)



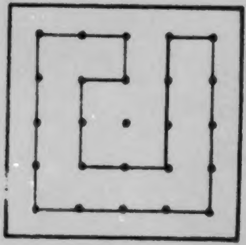
_____ square units

g)



_____ square units

h)



_____ square units

2) Make these figures on your geoboard. Record your answers on dot paper.

a) a square with an area of 9 square units

b) a rectangle with an area of 8 square units

c) a square with an area of 16 square units

d) a 6-sided figure with an area of 10 square units

e) an 8-sided figure with an area of 7 square units

HALF SQUARES ALSO

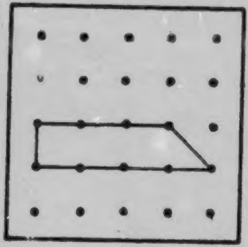
Materials Needed: Geoboard, rubber bands, dot paper

If □ is 1 square unit, how many squares units is ◺ ? ______ square unit.

Activity:

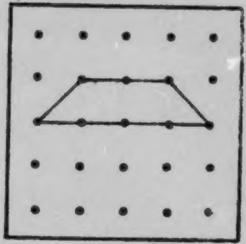
1) Make these figures on your geoboard and find the area of each in terms of square units.

a)



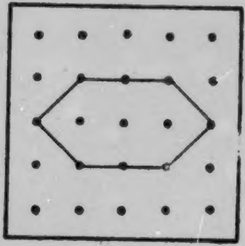
______ square units

b)



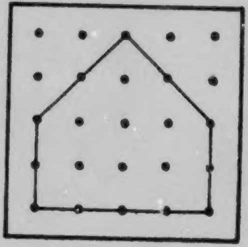
______ square units

c)



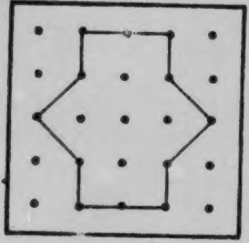
______ square units

d)



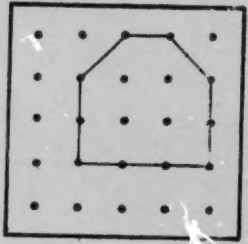
______ square units

e)



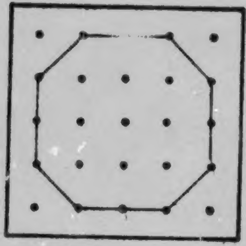
______ square units

f)



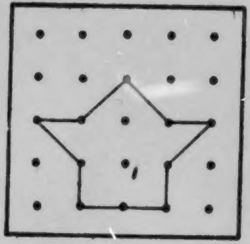
______ square units

g)



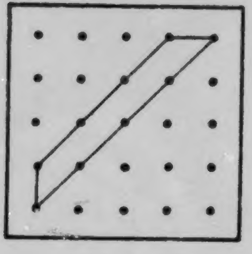
______ square units

h)



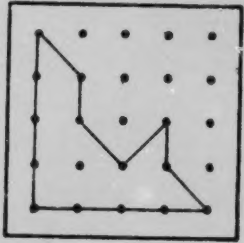
______ square units

i)



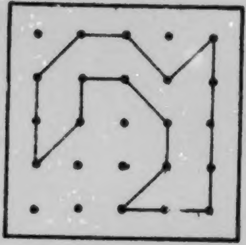
______ square units

j)



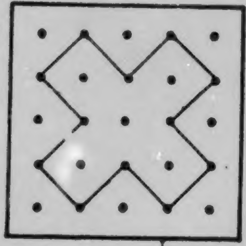
______ square units

k)



______ square units

l)



______ square units

2) Make these figures on your geoboard. Record your answers on dot paper.

a) a square with an area of 2 square units

b) a rectangle with an area of 4 square units

c) an isosceles triangle with an area of 4 square units

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ to ______________

Student Name ____ **Age** __________
Last **First** **or**
Grade __________

Content Area Geometry **Skills List No.** 48000
Sight & Sound# 8.3.12.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to use the area formulas for a square and rectangle.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, Area Formulas on the Geoboard, to demonstrate the formula for the area of a rectangle. The teacher will want to point out to the student that on a square, all sides are congruent, so that the sides are not differentiated, but called sides. In the rectangle, however, one pair of opposite sides will be called the length, and the other pair the width. The teacher should be aware that some students are concerned with which pair is which, and the teacher should convince the student that this is not really important.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the area of squares and rectangles, using the formula.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ______________

Teacher: ____
Signature **Title**

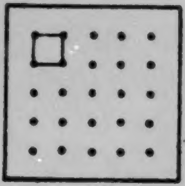
AREA FORMULAS ON THE GEOBOARD

The formulas for the areas of various polygons can be developed using a geoboard. The ideas that follow use | as the unit of length and □ as the unit of area.

You may want to use these ideas as a teacher directed activity or to develop a series of activity cards so students can discover the formulas.

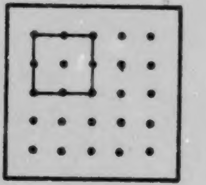
1) Area of a square

a)



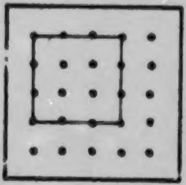
length of side = 1 unit
area = 1 square unit

b)



length of side = 2 units
area = 4 square units

c)

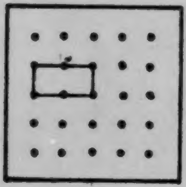


AREA = S×S

length of side = 3 units
area = 9 square units

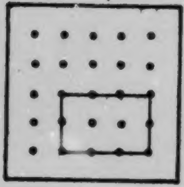
2) Area of a rectangle

a)



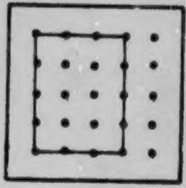
length of sides = 1 unit,
2 units
area = 2 square units

b)



length of sides = 2 units,
3 units
area = 6 square units

c)



AREA = l×w

length of sides = 3 units,
4 units
area = 12 square units

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last First
or
Grade ______________

Content Area Geometry **Skills List No.** 48300
Sight & Sound# 8.3.13

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the area of a parallelogram using the formula.

Activities: What will be done, when, how much (time), by whom?

The attached geoboard activity is a good one to develop the formula for a parallelogram. The geoboard will help show how the parallelogram and the rectangle are related. The teacher will have to emphasize the location of the base and height, stressing that the height is a perpendicular distance between bases, and not a slant height.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the areas of parallelograms using the formula.

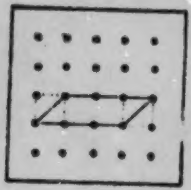
Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ____
Signature Title

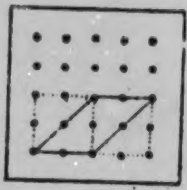
Area of a parallelogram (the height is shown along a dotted line)

a)



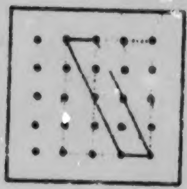
base = 3 units
height = 1 unit
area = 3 square units

b)



base = 2 units
height = 2 units
area = 4 square units

c)



AREA = bh

base = 1 unit
height = 4 units
area = 4 square units

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ______________________________ **Age** ____________
Last First
or
Grade ____________

Content Area Geometry **Skills List No.** 48600, 48900
Sight & Sound# 8.3.14.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the area of triangles using the formula.

Activities: What will be done, when, how much (time), by whom?

The attached geoboard activities show the development of the formula for the area of a triangle. The student can note that the formula is the same for all triangles, not just right triangles. The teacher will have to emphasize the location of the base and height, stressing that the height is a perpendicular distance, and not a slant height.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to determine the area of triangles from the formula.

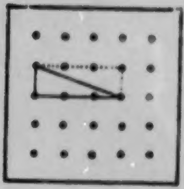
Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ______________________________
Signature Title

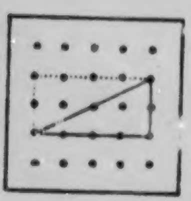
Area of right triangle

a)



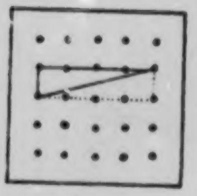
length of legs = 1 unit,
3 units
area = $1\frac{1}{2}$ square units

b)



length of legs = 2 units,
4 units
area = 4 square units

c)

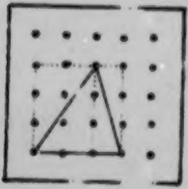


AREA = $\frac{1}{2}$ bh

length of legs = 1 unit,
4 units
area = 2 square units

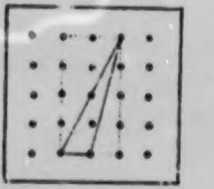
Area of a triangle (the height is shown along a dotted line)

a)



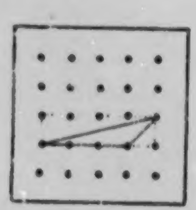
base = 3 units
height = 3 units
area = $4\frac{1}{2}$ square units

b)



base = 1 unit
height = 4 units
area = 2 square units

c)



AREA = $\frac{1}{2}$ bh

base = 3 units
height = 1 unit
area = $1\frac{1}{2}$ square units

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ______________________________ **Age** ________
Last First **or** **Grade** ________

Content Area Geometry **Skills List No.** 48600, 48900
Sight & Sound# 8.3.14.2

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to determine the area of a triangle, using the rectangle method.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, The Rectangle Method, to use as an introduction to finding the area of a triangle. The triangle is built on the geoboard, which can either be purchased, or built out of plywood. The triangle is then made into a rectangle. Then the area of the triangle is determined by taking half of the area of the rectangle.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the area of triangles using the rectangle method.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ________ **No** ________ **Date** ________

Teacher: ______________________________
Signature **Title**

THE RECTANGLE METHOD

Materials Needed: Geoboard, rubber bands, dot paper

The smallest square on the geoboard represents the area unit for this activity. □

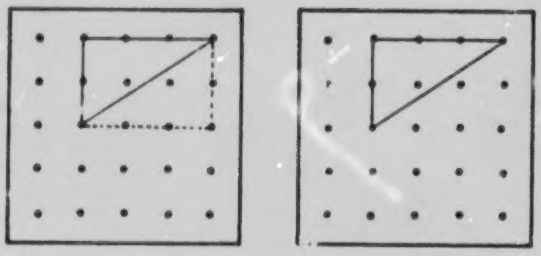
Activity:

1) a) The area of the rectangle is _____ square units.

b) The area of the triangle is ________ of the area of the rectangle.

c) The area of the triangle is _____ square units.

d) Steps a, b and c are called the rectangle method for finding the area of the triangle.

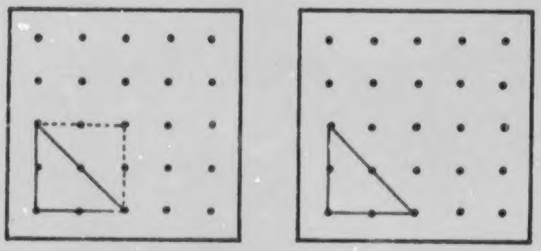


2) Look at these two diagrams.

a) The area of the square is _____ square units.

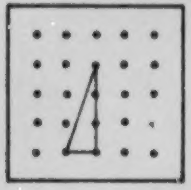
b) The area of the triangle is ________ of the area of the square.

c) The area of the triangle is _____ square units.

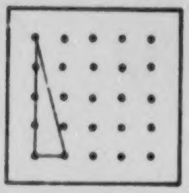


3) Make each of these triangles on your geoboard. Use a rubber band to make a square or rectangle from the triangle. Find the area of each triangle.

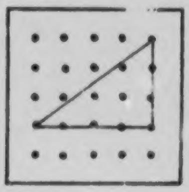
a)



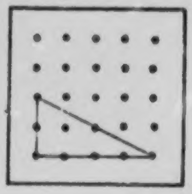
b)



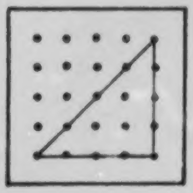
c)



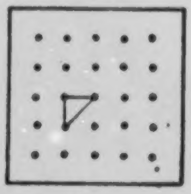
d)



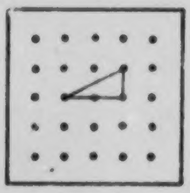
e)



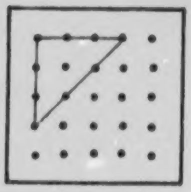
f)



g)

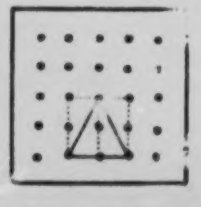


h)

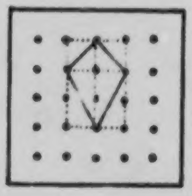


4) Use the rectangle method to find the area of each figure. A hint is given in the first two problems.

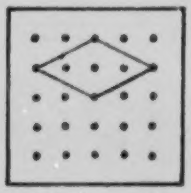
a)



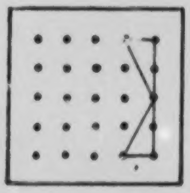
b)



c)



d)



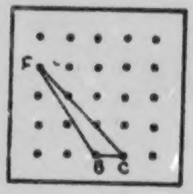
MORE ON THE
RECTANGLE
METHOD

Materials Needed: Geoboard, rubber bands, dot paper

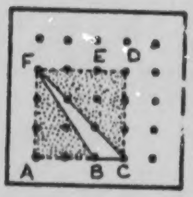
The smallest square on the geoboard represents the area unit for this activity. □

Activity:

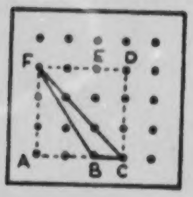
1) What is the area of triangle BCF?



The area of triangle BCF can be found by finding the area of square ACDF and subtracting the areas of triangle CDF and triangle ABF.

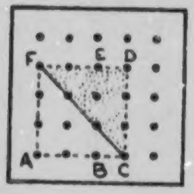


Step 1



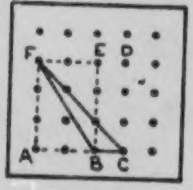
Make square ACDF. The area of square ACDF is ______ square units.

Step 2



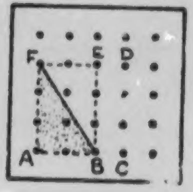
The area of triangle CDF is ______ square units.

Step 3



Make rectangle ABEF. The area of rectangle ABEF is ______ square units

Step 4

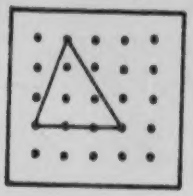


The area of triangle ABF is ______ square units.

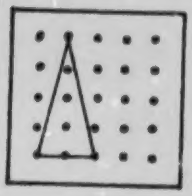
The area of triangle BCF is ______ square units.

2) Find the area of each of these figures.

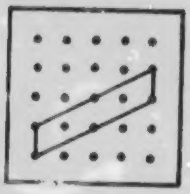
a)



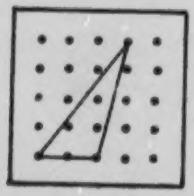
b)



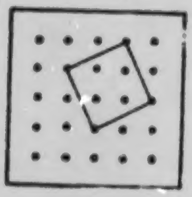
c)



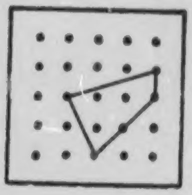
d)



e)



f)



Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age or Grade** ______________
Last First

Content Area Geometry **Skills List No.** 49200
Sight & Sound# 8.3.15

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the area of a circle.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, Pie Are Round; Cornbread Are Square, as an excellent development of the formula of the area of the circle. When the teacher is done, she can point out to the student that Pi (π) is an irrational number that has no exact value. We can, however, use 22/7 or 3.14 as a good approximation for computational purposes.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the areas of circles.

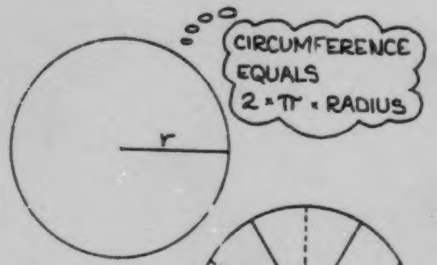
Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

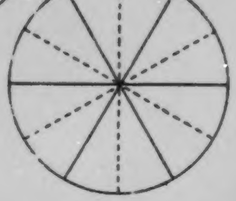
Teacher: ______________________________
Signature Title

PIE ARE ROUND, CORNBREAD ARE SQUARE

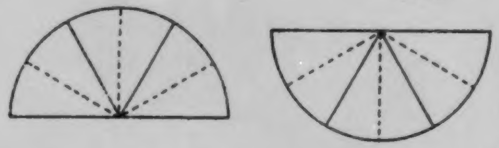
I Cut a large circular disk from tagboard. A radius of 20 cm is convenient for a bulletin board display; a radius of 5 cm is handier for an overhead demonstration.


r
CIRCUMFERENCE EQUALS 2 × π × RADIUS

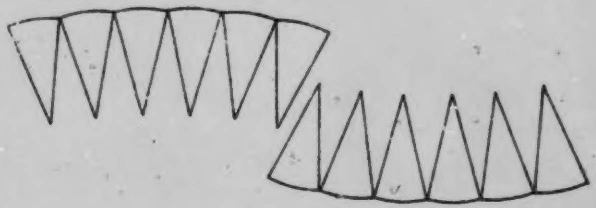
II Draw line segments to divide the disk into 12 congruent sectors. This can be done by drawing 30° central angles or by inscribing a regular 12-gon as described in *Inside the Circle I* in the Circles subsection.



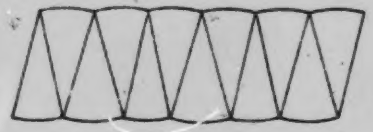
III Cut along one diameter to make two semicircular regions.



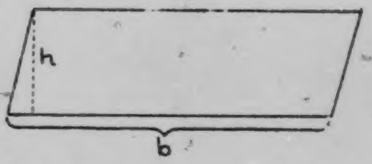
IV Make cuts along the line segments drawn in II, but be careful not to cut through to the original circle.



V Fan out each semicircular region and fit them together as shown. This figure is very much like a parallelogram.



VI The area of a parallelogram is base times height.



VII The area of the "parallelogram" to the right is

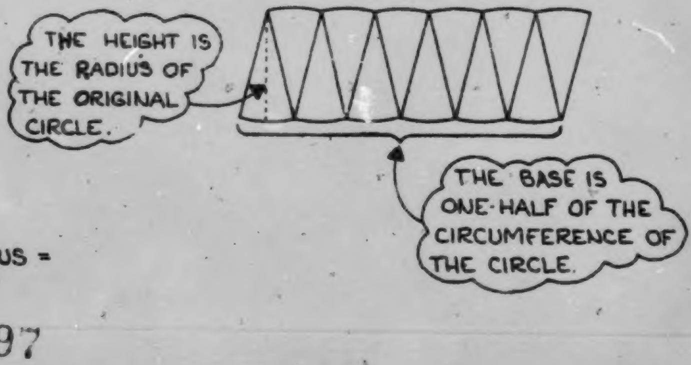
$$\text{AREA} = b \times h$$

$$\overbrace{\tfrac{1}{2} \times \text{CIRCUMFERENCE}}^{\text{BASE}} \times \overbrace{\text{RADIUS}}^{\text{HEIGHT}} =$$

$$\tfrac{1}{2} \times 2 \times \pi \times \text{RADIUS} \times \text{RADIUS} =$$

$$\pi \times \text{RADIUS} \times \text{RADIUS} =$$

$$\pi \times r^2$$


THE HEIGHT IS THE RADIUS OF THE ORIGINAL CIRCLE.
THE BASE IS ONE-HALF OF THE CIRCUMFERENCE OF THE CIRCLE.

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ to ______________

Student Name ____ **Age** ______________
Last **First** **or**
Grade ______________

Content Area Geometry **Skills List No.** 46200
Sight & Sound# 8.3.16.1

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to determine the perimeter of a polygon.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, More Than One Way, to introduce the concept of perimeter. The student will soon discover that perimeter is found by adding the lengths of all the sides of the polygon. The teacher needs to note to the student that all of the sides need to be added to get the total perimeter. The attached activity, Perplexing Perimeters, has polygons that are missing some measurements. In order for the student to find the perimeter, she will notice that the missing side distances must be found.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

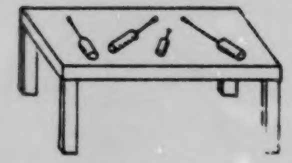
Given a teacher made test, the student will be able to find the perimeter of polygons.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

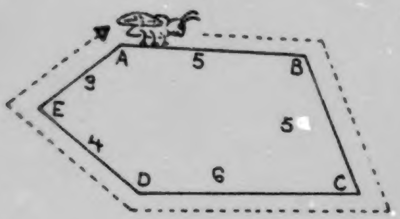
Teacher: ____
Signature **Title**

MORE THAN ONE WAY



Any carpenter can tell you that to set a screw you must have a screwdriver of the correct size. Just like carpenters, your students may be able to do better if they have a wide range of tools (methods) to choose from. Here is a collection of methods which can be used to measure perimeters.

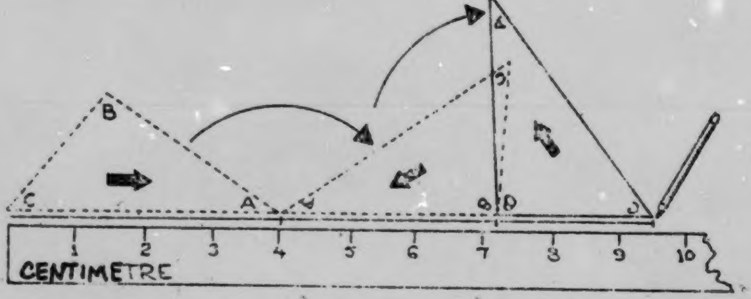
I To introduce perimeter you may use a story type approach.



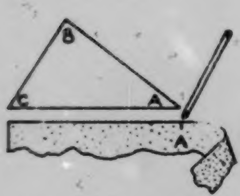
A bug crawls along the sides of a polygon until he returns to his starting position.

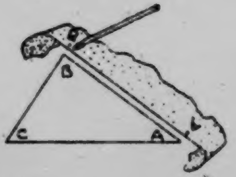
1) How far does the bug walk from point A to point B?
2) How far does the bug walk from B to C?
3) Starting at A how far does he walk to get all the way back around to A?
4) What is the perimeter of the polygon?

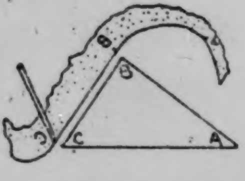
II Polygons which are convex can be rolled along a ruler. It helps to mark each edge as you rotate it, so if it slips you do not have to start over.

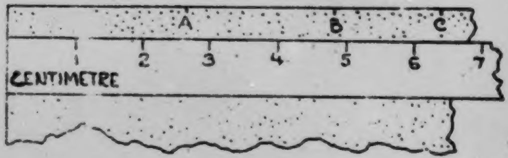


III Using a paper's edge move around the outside of a polygon marking each vertex as you go.

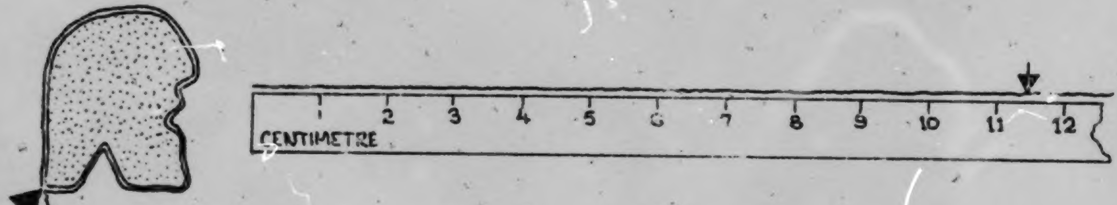








IV Carefully lay a string around the edge of [illegible]es having curved edges, irregular edges or indentations. Measure the string's length to find the perimeter.

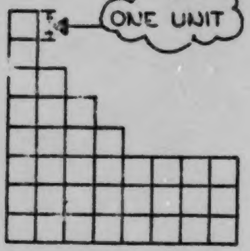


A complaint we commonly hear is that students cannot apply measuring skills to tasks outside the mathematics classroom. Keeping this in mind it may be wise to include measuring such things as rooms, fields, balls, etc., besides using just worksheets of mimeographed patterns.

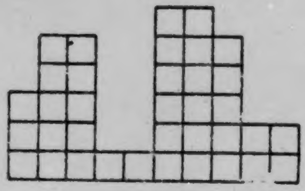
BEST COPY AVAILABLE

PERPLEXING PERIMETERS

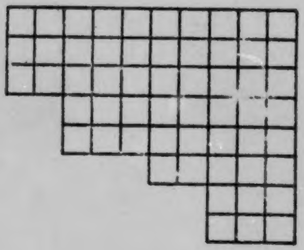
I Count to find the perimeter of each polygon.



Perimeter: ________



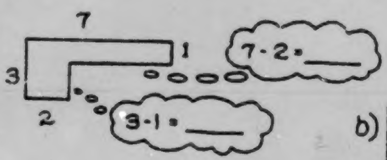
Perimeter: ________



Perimeter: ________

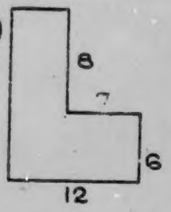
II Find and write the length of the unmarked sides next to each segment. Find the perimeter of each polygon.

a)



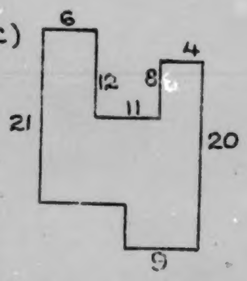
Perimeter: ________

b)



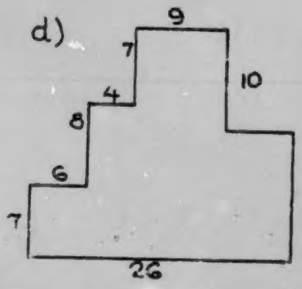
Perimeter: ________

c)


6
4
12
8
11
21
20
9

Perimeter: ________

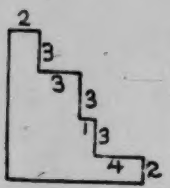
d)


9
7
10
4
8
6
7
26

Perimeter: ________

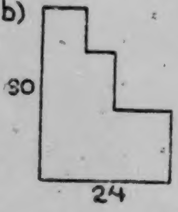
III Find each perimeter.

a)



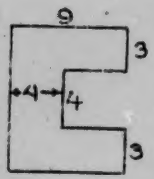
Perimeter: ________

b)



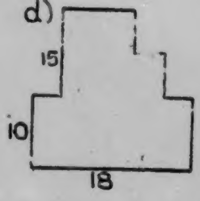
Perimeter: ________

c)



Perimeter: ________

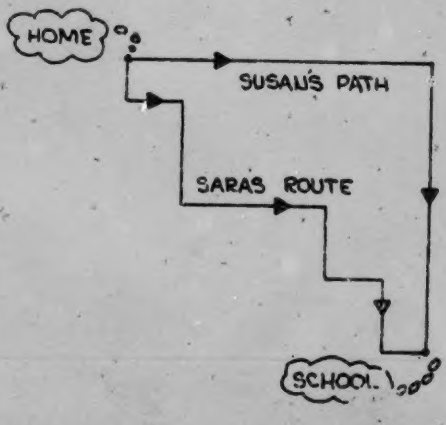
d)



Perimeter: ________

Challenge: Susan and her sister Sara walk to school each day. Sara knows a different way to school. If the girls start at the same time and walk at the same speed, who will get to school first? ________

Explain your answer. ____


HOME
SUSAN'S PATH
SARA'S ROUTE
SCHOOL

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ (**Last** / **First**) **Age or Grade** ____________

Content Area Geometry **Skills List No.** 46200
Sight & Sound# 8.3.16.2

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the circumference of a circle.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the techniques of the attached activity, Inside and Outside a Circle, to introduce the concept of circumference. The student will discover that the circumference for a circle is found in the same manner as the perimeter of a polygon. As the student becomes more comfortable with finding circumference, the teacher can introduce the standard formula for finding the circumference, $C = \pi d$. In this formula, C is the circumference, π is approximately 3.14 or 22/7, and d is the diameter of the circle.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the circumference of circles.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____________ (**Signature** / **Title**)

INSIDE AND OUTSIDE A CIRCLE

1) Draw a circle with a radius of at least 6 centimetres. Mark 10 points on the circle. They do not have to be equally spaced. Label the points with lower case letters. (See diagram I.)

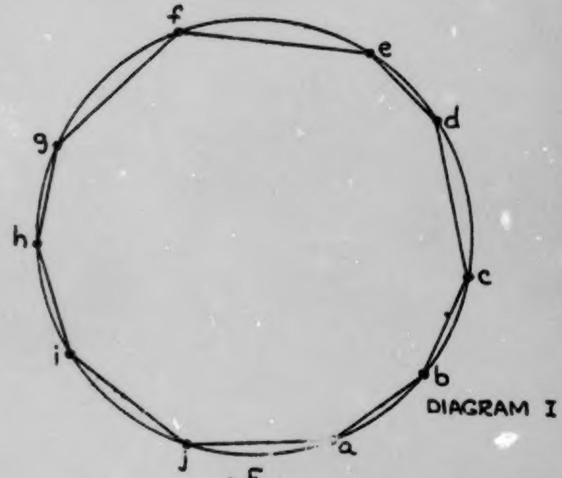


DIAGRAM I

2) Connect consecutive points with line segments. Measure each inside segment in millimetres and record the lengths in a table like the one below. Find the total length and record.

3) Outside the circle draw line segments that touch the circle only at the points you marked in part (1) (a, b, c, etc.). Label the points where these outside segments cross with upper case letters. (See diagram II.)

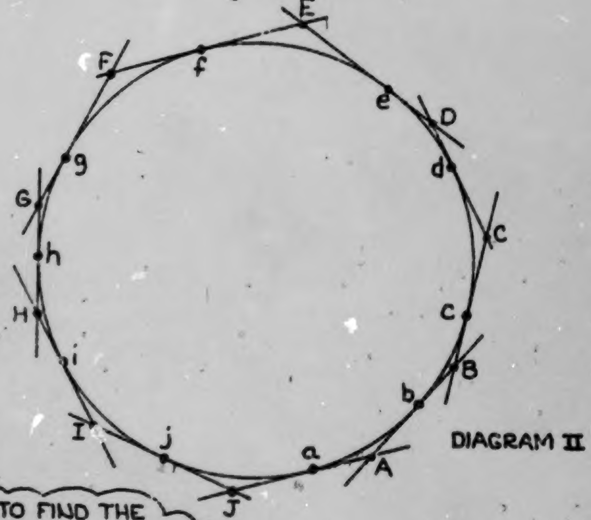


DIAGRAM II

4) Measure the outside segments (just between the points) in millimetres and record the lengths. Find the total and record.

		TOTAL
INSIDE SEGMENTS	___ ___ ___ ___ ___ ___ ___ ___ ___ ___	
OUTSIDE SEGMENTS	___ ___ ___ ___ ___ ___ ___ ___ ___ ___	

5) Find the average of the two totals.

HINT: TO FIND THE AVERAGE ADD THE TWO TOTALS AND DIVIDE BY 2.

6) Draw circles the same size as you drew before and repeat steps 1-5 using 13 points on the circle. Then use 16 points. As the number of points increases, what happens to the average of the two totals?

7) Lay a string around the circle. Measure its length. What do you notice?

8) How many points do you think should be used to get a very close approximation of the circumference (distance around) the circle?

9) You can repeat the activity using a larger circle and more points to get a close approximation.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ____________ to ______________

Student Name ____ **Age** __________
Last First or
Grade __________

Content Area Geometry **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to draw a translation using a grid.

Activities: What will be done, when, how much (time), by whom?

The attached activity, A Shift in the Right Direction, is a good teacher directed activity to help guide the student through the idea of translation. As the students proceed, the translations get to be more complicated. The student will have a good grasp of the concept of translation when he finishes this activity.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to draw translations of figures using a grid.

Total Days Participation ____________ **out of a possible** ______________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

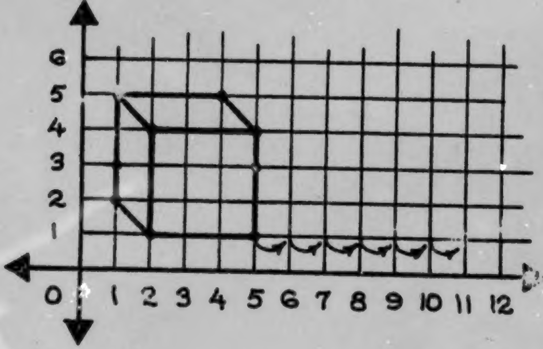
Teacher: ____
Signature Title

A SHIFT IN THE RIGHT DIRECTION

One approach for introducing translations or slide motions in geometry is through the use of grid paper.

1) First have the student investigate the effect of moving a set of points either horizontally or vertically.. The new figure should not overlap the original.

For example: Move each point 6 units to the right.
Is the new figure a cube?

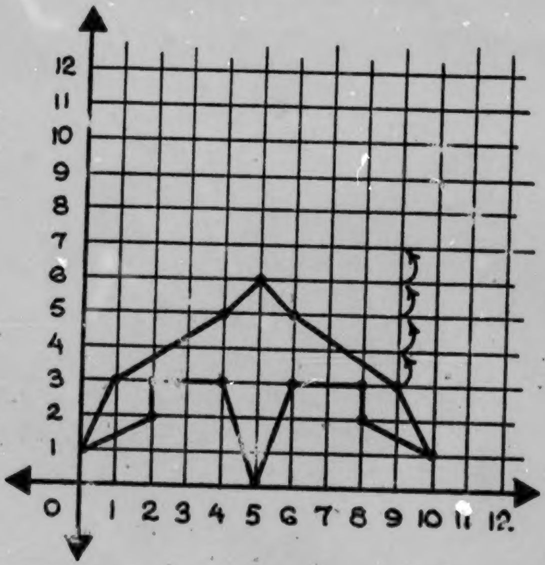


6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10 11 12

2) Next the student can perform a horizontal or vertical move that does produce a new figure which overlaps the old.

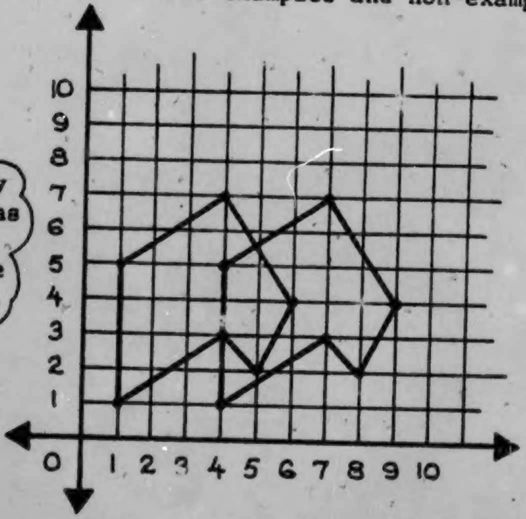
Points on the figures are emphasized and the instructions refer to moving points on the figure rather than just moving the figure.

Can you show on the graph where the bird will be if each point is moved 4 units up?



12
11
10
9
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10 11 12.

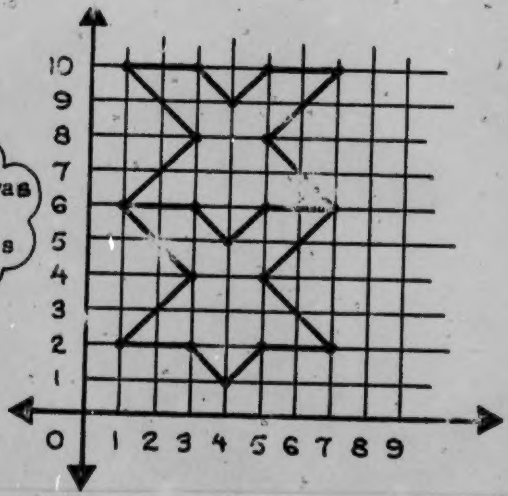
3) The student can examine pictures and determine if they do illustrate the given translation. Select examples and non-examples.



10
9
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10

Every point was moved 3 to the right.

Each point was moved 5 units down.

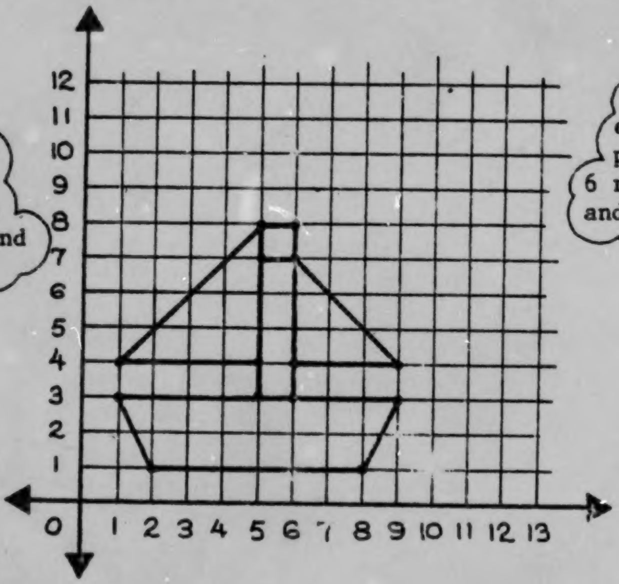


10
9
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9

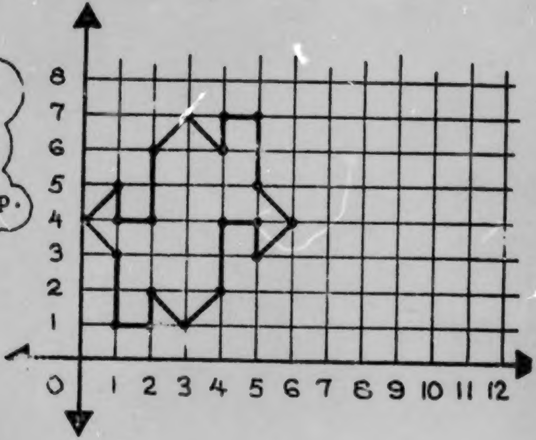
A SHIFT IN THE RIGHT DIRECTION

(PAGE 2)

4) Students can then perform moves that involve both a horizontal and vertical shift.


0 1 2 3 4 5 6 7 8 9 10 11 12 13
1 2 3 4 5 6 7 8 9 10 11 12

Move every point 4 right and 3 up.

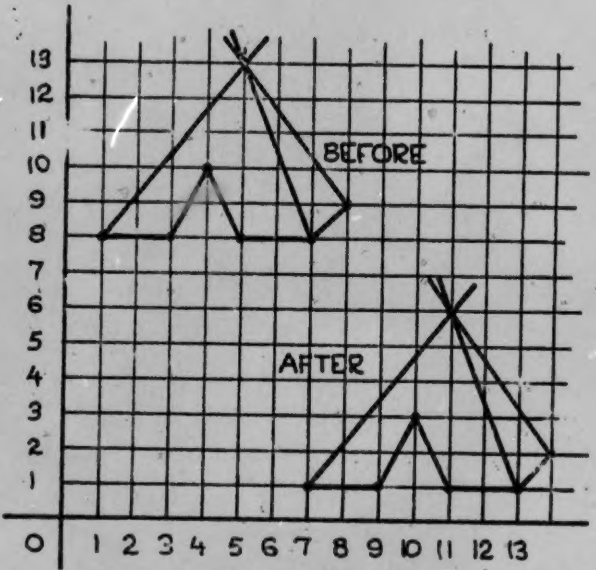

0 1 2 3 4 5 6 7 8 9 10 11 12
1 2 3 4 5 6 7 8

Move every point 6 right and 0 up.

Discussion questions might include:

a) Is the ship larger or smaller after the move?
b) Is the ship a different shape after the move?

5) Examples that show a figure before and after a move can be given. Students are asked to describe the move.

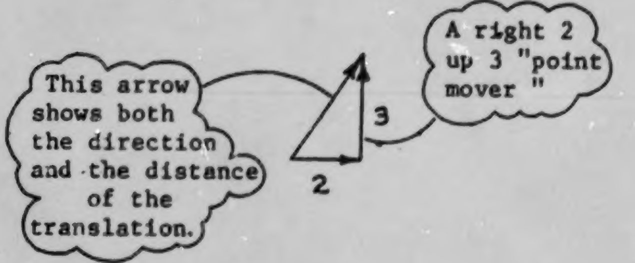

BEFORE
AFTER
0 1 2 3 4 5 6 7 8 9 10 11 12 13
1 2 3 4 5 6 7 8 9 10 11 12 13

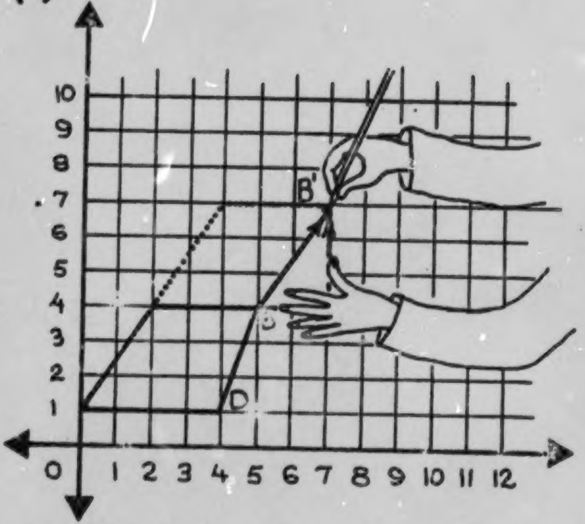
Every point was moved right ____ and down ____. If the point (9,10) is shifted with this move, what is its location? (__,__)

A SHIFT IN THE RIGHT DIRECTION

(PAGE 3)

6) "Point movers" can then be introduced.


This arrow shows both the direction and the distance of the translation.
A right 2 up 3 "point mover"
3
2


10
9
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10 11 12
B'
D

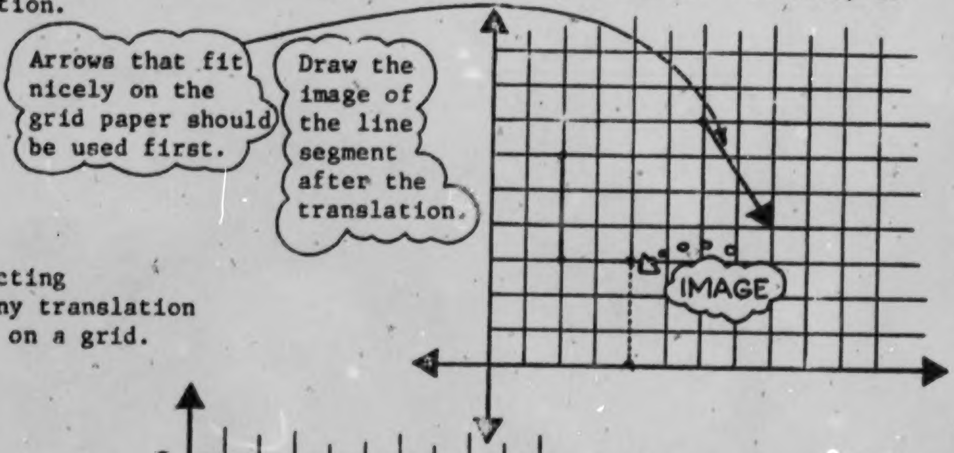
7) Have students design "point movers" for various translations and then have them use the movers to translate several figures. Any point on a figure can be conveniently translated instead of just the grid points.

8) Students can then be asked to design a figure on graph paper and show its new position after a translation.

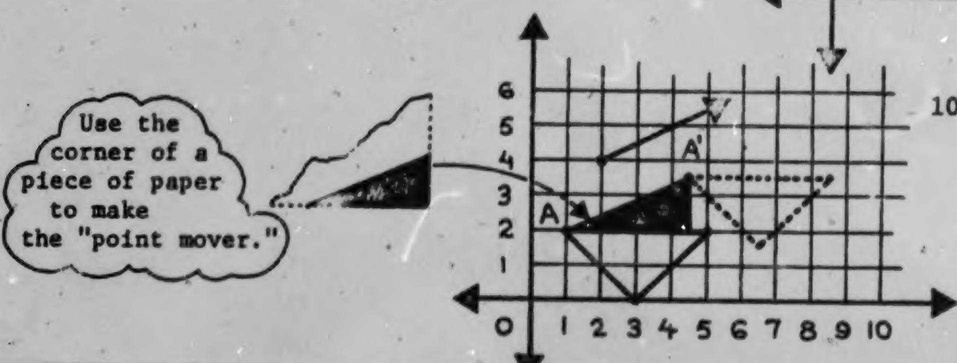
a) right 2, up 6 b) right 4, down 2 c) left 6, down 1

Students can give their figure and translation instructions to a friend to do.

9) Students can now be introduced to the arrow (without the point mover attached) to describe a translation.


Arrows that fit nicely on the grid paper should be used first.
Draw the image of the line segment after the translation.
IMAGE

However by constructing a "point mover," any translation can be easily done on a grid.


Use the corner of a piece of paper to make the "point mover."
6
5
4
3
2
1
0
1 2 3 4 5 6 7 8 9 10
A
A'

10) Students may use a sequence of translations on a figure to create an illusion of motion.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________________________ **Age** ________
Last **First** **or**
Grade ________

Content Area Geometry **Skills List No.** ____________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to identify the relationship between angles and lines of symmetry.

Activities: **What will be done, when, how much (time), by whom?**

The teacher should direct the student through the attached activity, Angles and Folds. As the student goes through the activity, he will discover how angles and lines of symmetry for objects are related.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to identify the relationship between angles and lines of symmetry.

Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: **Yes** ________ **No** ________ **Date** ________

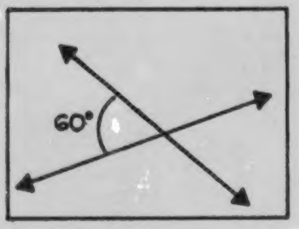
Teacher: ____
Signature **Title**

ANGLES & FOLDS

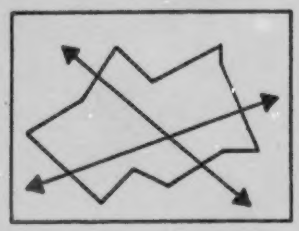
Materials: Scrap paper, scissors, straightedge, protractor

Have your students:

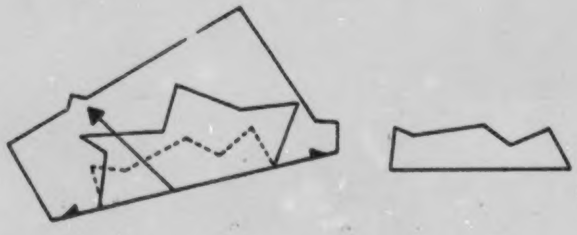
1 Draw 2 lines across their papers intersecting at a 60° angle. Accuracy is important. See figure 1.



2 Sketch an irregular figure keeping away from the intersection point. See figure 2.



3 Carefully fold the paper on one of the lines and cut along the outline of the figure. Turn the paper over and cut along the outline that remains. See figure 3.



4 Open the paper and observe the symmetry.

5 Fold along the other line and cut away the portion that is not doubled. Turn the paper over and cut off the undoubled part.

6 Open and observe.

Ask your students how many times they think they will be able to keep folding and cutting off excess paper. Have students keep track of the number of folds.

7 Continue folding and cutting until you are finished.

This should take a maximum of three folds. If it takes more the student probably didn't fold carefully, cut away on both sides, or draw the angles carefully. To decrease the chances of error you might want to ditto off the angles on scrap paper or even ditto off a figure and angle the first time the students try it. This way they should all come out with the same figure after folding and cutting.

The steps could be repeated with a 45° angle. This should take a maximum of four folds. Students could then predict the maximum number of folds for a 90°, 20°, 30°, 10° angle.

Setting up a table would help.

ANGLE	MAXIMUM NUMBER OF FOLDS
45°	4
60°	3
90°	.
.	.
.	.
.	

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** __________

For Dates __________ to __________

Student Name ______________________________ **Age** ________
Last First or
Grade ________

Content Area Geometry **Skills List No.** __________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to draw relation images.

Activities: What will be done, when, how much (time), by whom?

The activity sheet, Reflection Methods, attached to this form gives five different activities which will help the student develop his ability to draw and identify reflection images. The teacher needs to point out to the student that he needs to keep in mind the location of the line of symmetry. As the student continues through the activities, his ability to draw the reflection images will become more advanced.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to draw and identify reflection images.

Total Days Participation __________ out of a possible __________

Criterion Attained: Yes ________ No ________ Date ________

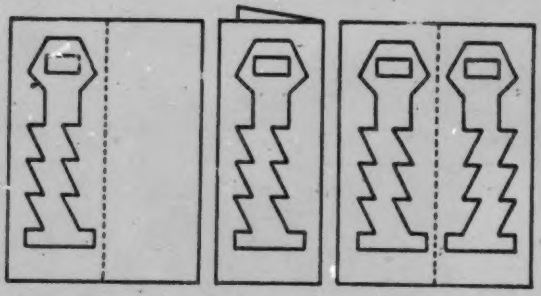
Teacher: ______________________________
Signature Title

REFLECTION METHODS

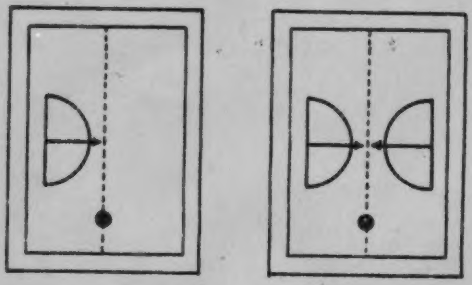
A) A method for drawing reflections uses grid paper. See *Grid Reflections*.

B) Two other methods use tracing paper.

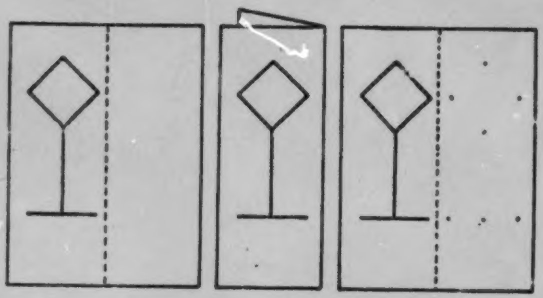
1) Have students trace the figure and the line of reflection on tracing paper. Then fold the paper along the line of reflection with the figure on the outside. Tracing over the figure produces the reflection which can be seen by unfolding the paper.



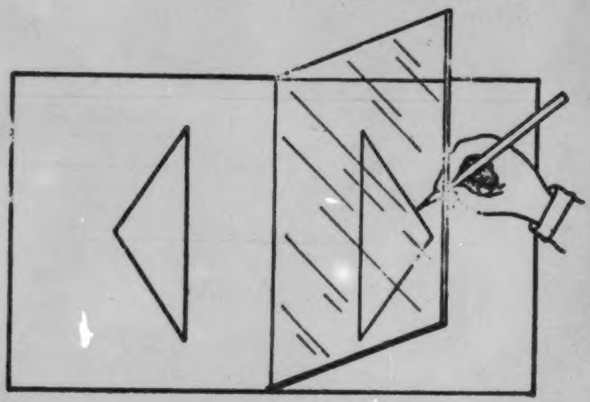
2) Mark a reference dot on the line of reflection. Place tracing paper over the figure and trace it, the line of reflection, and the reference dot. Flip the tracing paper across the line of reflection and line up the lines and the reference dots. Retrace the figure pressing down hard to leave an impression on the original paper. Remove the tracing paper and mark over the impression.



C) Fold the paper along the line of reflection. Then using a pin or compass point punch tiny holes through the vertices of the figure. Unfold the paper and connect the pin holes to produce the reflection. More pin holes will be necessary if the figure contains curved lines.

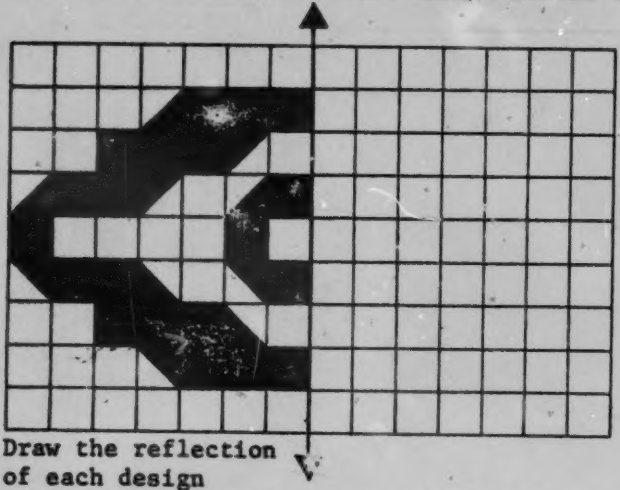


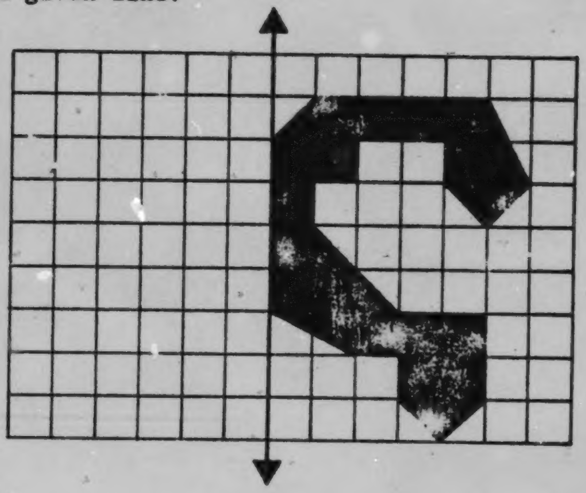
D) Place a piece of plastic along the line of reflection perpendicular to the paper. Look through the plastic and with a pencil carefully trace the image as it appears through the plastic. Straight line figures can be done by marking the vertices and then connecting the points.



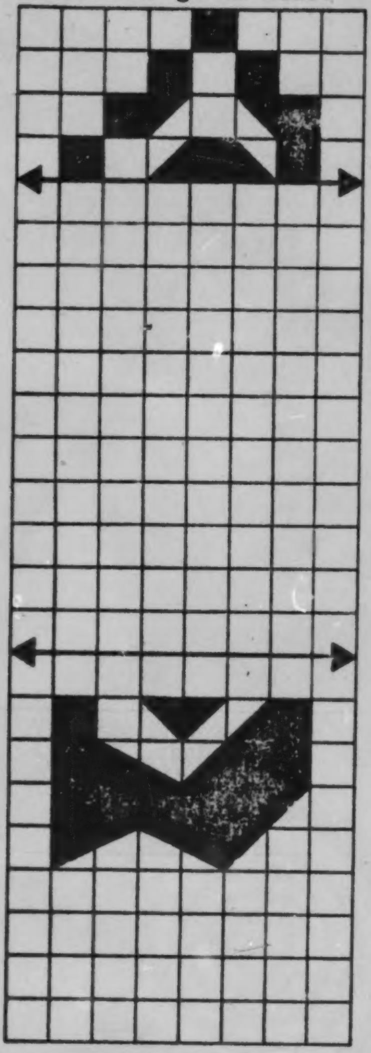
GRID REFLECTIONS

Draw the reflection of each design across the given line.

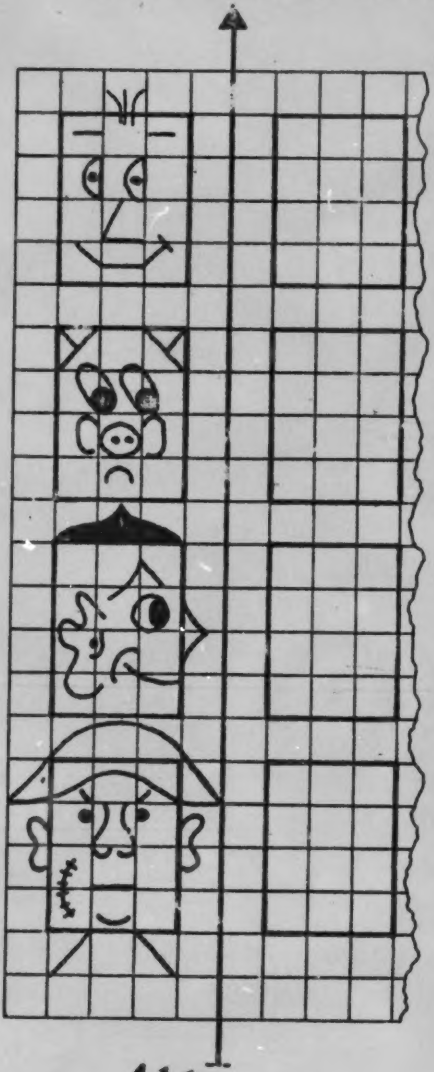


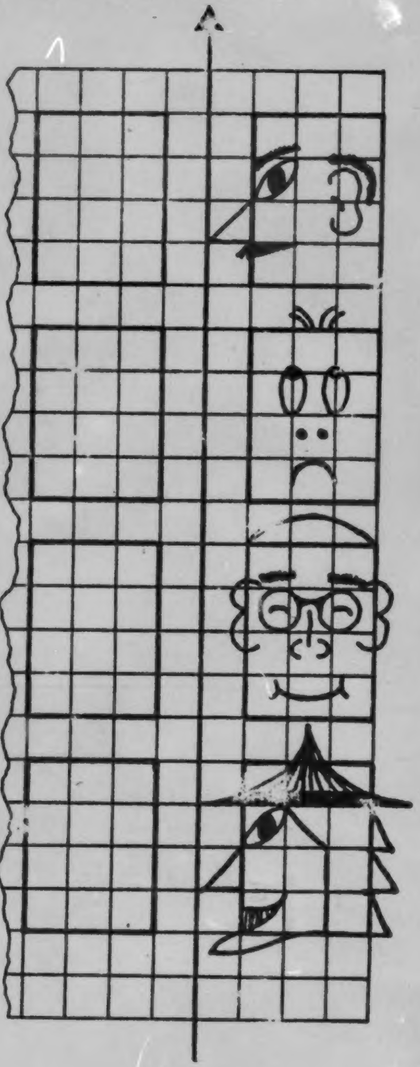


Draw the reflection of each design across the given line.



Reflect each face into the empty box beside it.





Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area Geometry **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to make figures using line symmetry.

Activities: What will be done, when, how much (time), by whom?

The attached activity, Symmetry, gives the teacher several ways to help the student get an intuitive feeling for line symmetry. As the student goes through the activity, he will develop a sense of looking for symmetry in objects. Trade Marks, is another activity (see attached) that will help the student with locating the line of symmetry. The student will be encouraged to draw the line that will be the line of symmetry.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify line symmetry in several figures.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

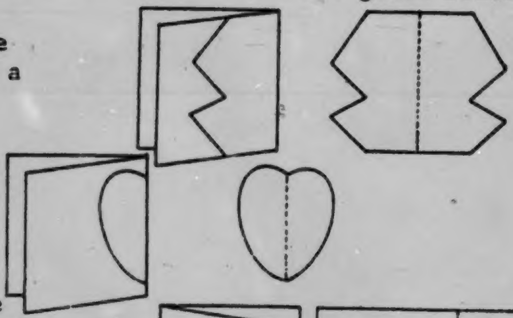
Teacher: ____
Signature Title

SYMMETRY

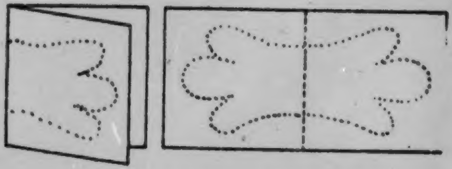
To introduce the concept of line symmetry students could be given the opportunity to create symmetrical figures. Several ideas are given below.

1) Have students fold a piece of paper. Make a random cut through the folded paper and a symmetrical figure will be formed.

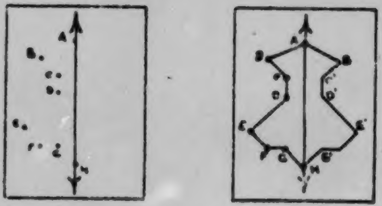
2) Students could first draw a pattern along the fold line and then cut along the outline to make the figure. Make a valentine using this method.



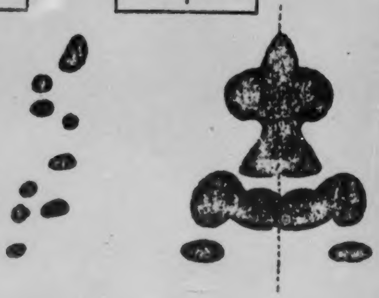
3) After folding the paper students could use a pin or compass point to punch tiny holes through both pieces of paper. Unfolding the paper will reveal a symmetrical figure.



4) Students can mark points on a grid paper. By using a line of symmetry the images of the points can be marked. Then connecting the points in order and the images in order will produce a symmetrical figure.

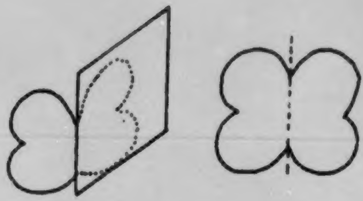


5) Students can fold a piece of paper and then place some spots of ink between the two pieces. By pressing the paper together an ink blot will be formed that will be symmetrical.



6) Place a piece of carbon paper face down on top of a sheet of paper. Fold the paper so the carbon is inside. Use the fold as an edge and draw a design on the outside of the paper. Unfold the paper and remove the carbon paper. A symmetrical figure can be seen on the inside of the paper.

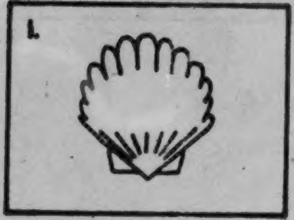
7) A transparent piece of plastic (or the commercial product Mira) can be placed next to a figure and the reflection of the figure can be drawn by looking through the plastic and tracing the image.

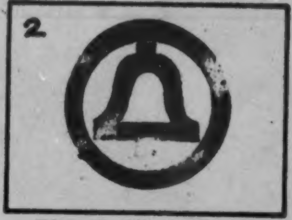


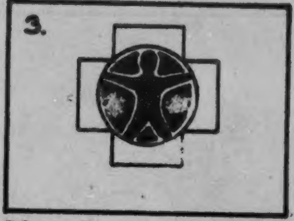
These methods help students gain an intuitive feeling for line symmetry.

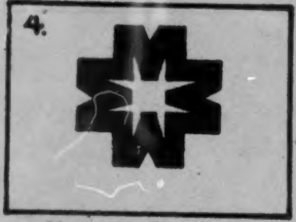
TRADE MARKS

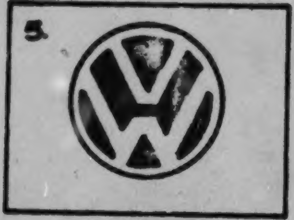
Many companies have trademarks that have lines of symmetry. Several are shown below. Many other examples can be found in newspapers, magazines, and the yellow pages.

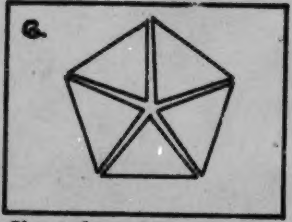

1. Shell Oil Co.

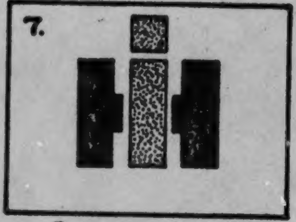

2. The Bell System

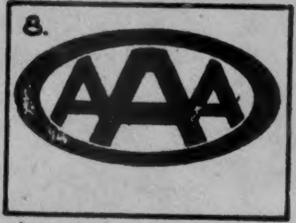

3. Blue Cross of Oregon

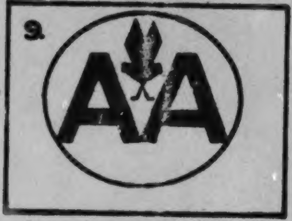

4. Metropolitan Life Insurance

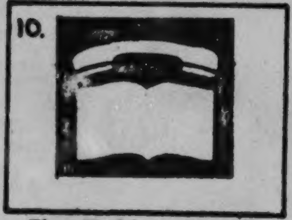

5. Volkswagen of America

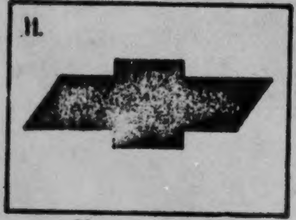

6. Chrysler Corporation

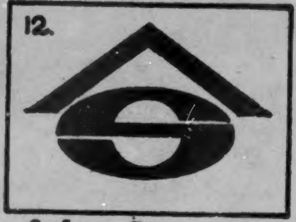

7. International Harvester


8. American Automobile Association


9. American Airlines


10. The Yellow Pages


11. Chevrolet


12. Safeco Insurance

Activities for the students might include:

1) A worksheet where students decide if a trademark has a line(s) of symmetry and then sketch the line(s) of symmetry on the trademark.

2) A cut and paste activity where students search newspapers, magazines or the yellow pages to find examples. If point, line and plane symmetries have been studied the examples might be grouped according to each type of symmetry.

For any of these activities students could sketch the line(s) of symmetry on the trademarks. Non-examples of line symmetry such as the Chevrolet trademark (point symmetry), the Safeco Insurance trademark (one part has line symmetry and one part has point symmetry), or trademarks with no symmetry could be included.

Two excellent sources of trademarks are Trademarks:A Handbook of International Design by Peter Wildbur and Trade Marks & Symbols, Volume 2 by Yasaburo Kuwayama, both published by Van Nostrand Reinhold Co.

Form OP 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________________ **District:** ____________________ **Area** __________

For Dates ______________ to ______________

Student Name ____ **Age** __________
Last First or
Grade __________

Content Area Geometry **Skills List No.** __________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to locate points from ordered pairs.

Activities: What will be done, when, how much (time), by whom?

The teacher can adapt the attached, Coordinate Tic-Tac-Toe, game from a class to one between two students, or the student and a teacher. The whole process will get the student acquainted with graphing ordered pairs. After the student is comfortable with this, the teacher can give the student the attached activity, It's Startling, which will further his confidence in working with ordered pairs. The student will become more familiar with determining coordinates for points by working on the attached activity, Are You Clumsy or Coordinated? A Long Time Ago is an adaptation of the familiar dot-to-dot activity that students are aware of. When the student has completed these four activities, he will be well versed in this skill.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to locate points from ordered pairs.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ____
Signature Title

COORDINATE TIC-TAC-TOE

Materials: Chalkboard or overhead projector with grid

Objective: To discover how to locate points on a grid from number pairs

Directions:

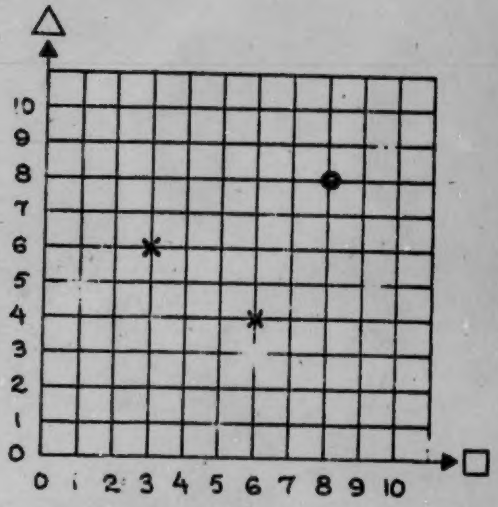
1) Divide the class into two teams, the X's and the O's.

2) Tell the class that this is a game of Tic-Tac-Toe and that a team must get five X's or five O's in a row to win.

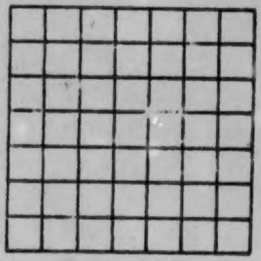
3) Play begins by a member of the X-team giving two numbers, each less than or equal to 10. You record these in a table and place an X on the grid in the correct spot. The O-team then gives two numbers and the game progresses.

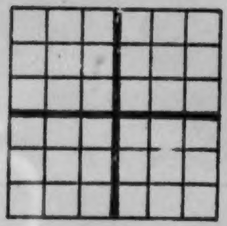
4) Once a number is given it cannot be changed. The student giving the number pair cannot receive help from the rest of the team. (You might decide which team member responds so that those who are nervous can move early in the game.

5) If the student gives a number pair previously used or beyond the limits of the grid the team loses that turn.



	□	△
X	3	6
O	8	8
X	6	4





SIGNED NUMBERS COULD BE USED AS COORDINATES ON THIS PAGE.

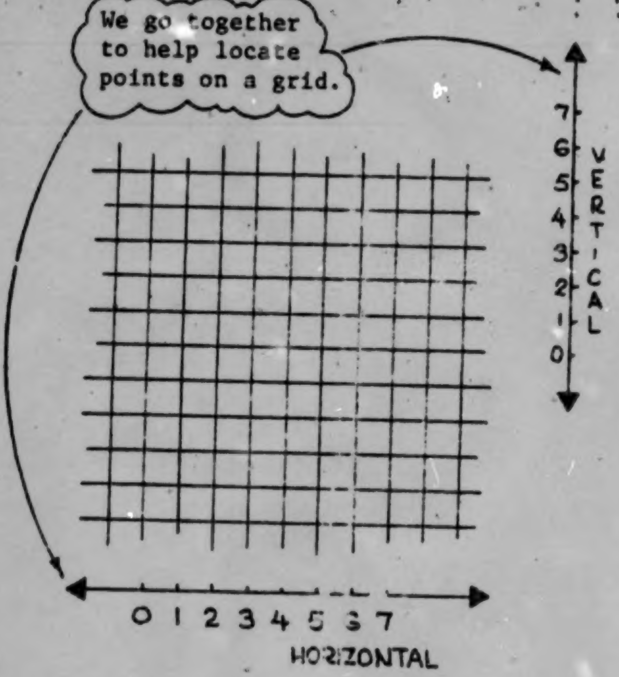
Variation:

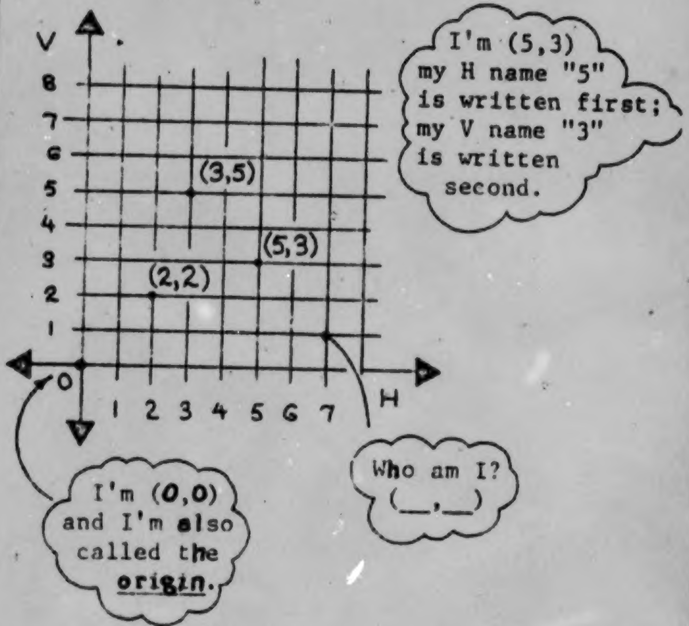
To introduce the activity use a grid without axes. Play the game by having each team member place an "X" or "O" on the grid when it is his turn.

Later, position axes on the grid and tell the class that you have become the official recorder. Ask them to devise a method to tell you how to mark their moves. You should receive suggestions like "Right two, up three" or "Up six, to the left seven."

After introducing ordered pairs, the game can be played for additional practice in graphing ordered number pairs.

IT'S STARTLING!

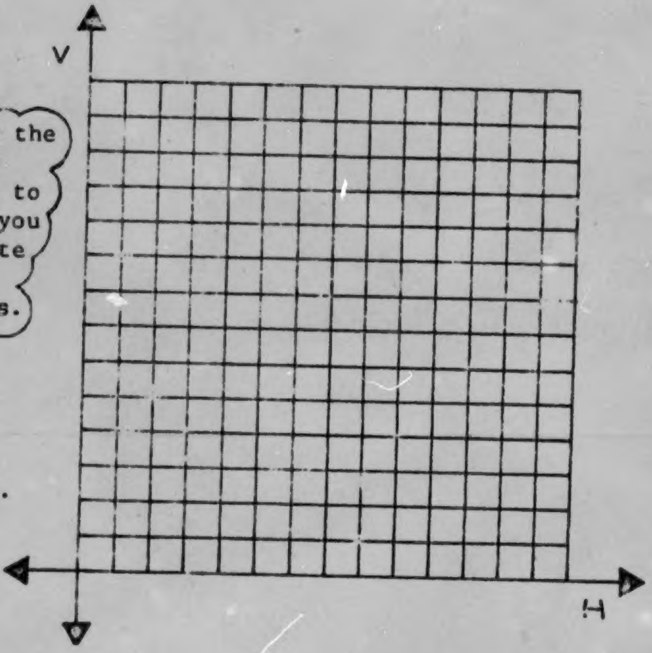

We go together to help locate points on a grid.
7
6
5
4
3
2
1
0
VERTICAL
0 1 2 3 4 5 6 7
HORIZONTAL


V
8
7
6
5
4
3
2
1
0
1 2 3 4 5 6 7
H
(3,5)
(5,3)
(2,2)
I'm (5,3) my H name "5" is written first; my V name "3" is written second.
I'm (0,0) and I'm also called the origin.
Who am I? (__,__)

1) On the grid paper to the right mark points at these locations:

	(H,V)
A)	(7,7)
B)	(10,7)
C)	(8,5)
D)	(9,2)
E)	(6,4)
F)	(3,2)
G)	(4,5)
H)	(2,7)
I)	(5,7)
J)	(6,9)

Number the H and V lines to help you locate the points.



2) Now connect A to B, B to C, C to D ..., I to J, J to A by drawing line segments.

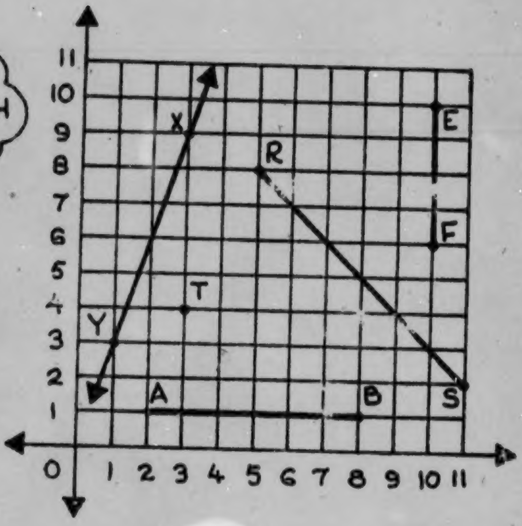
ARE YOU
CLUMSY OR COORDINATED?

1) Give the coordinates for each point:

T = (3,4) R = _____ S = _____

HORIZONTAL VERTICAL

THE COORDINATES OF A POINT ARE THE TWO NUMBERS WHICH LOCATE IT ON THE GRID..



2) Give the coordinates of the end points of segment AB. (,), (,)

Give the coordinates for three more points on line segment AB.

_____, _____, _____

All the points on line segment AB have coordinates with what second number? _____

3) Give the coordinates of the end points of segment EF. _____, _____

All the points on line segment EF have coordinates with what first number? _____

4) Graph the point (5,4).

All the points directly right of (5,4) have coordinates with what second number? _____

All the points directly above (5,4) have coordinates with what first number? _____

5) Give the coordinates of the midpoint of each segment:

$\overline{AB}$ _____ $\overline{EF}$ _____ $\overline{RS}$ _____

6) Suppose F is the midpoint of a segment with one end point at E. Write the coordinates of the other end point of the segment. _____

Graph the point.

7) Give the coordinates of the midpoint of the segment whose end points have coordinates (1,1) and (7,7). _____

8) Does point (2,5) lie on line XY? _____

Write the coordinates of three points that lie on $\overline{XY}$. _____, _____, _____

How is the second number related to the first in each pair? _____

Do you think (7,13) would lie on line XY? _____

A LONG TIME AGO

1) Locate each group of points on the grid and connect them in order with straight line segments. Do not connect the last point of each group with the first point of the next group.

I. (6,24), (7,24).

II. (9,12), (6,12), (8,16).

III. (9,21), (10,22), (10,23), (9,23).

IV. (5,23), (3,23), (1,22), (1,21), (4,20½).

V. (5,27), (6,27), (7,26).

VI. (3,13), (1,12), (3,11), (6,11), (6,3), (2,3), (1,2), (8,2), (8,16).

VII. (10,15), (10,11), (11,10), (11,9), (10,8), (8,11), (6,11).

VIII. (11,22), (11,20).

IX. (11,24), (12,21).

X. (12,25), (13,22).

XI. (3,20), (4,20), (6,19), (6,18), (3,13), (4,12), (9,18), (13,12).

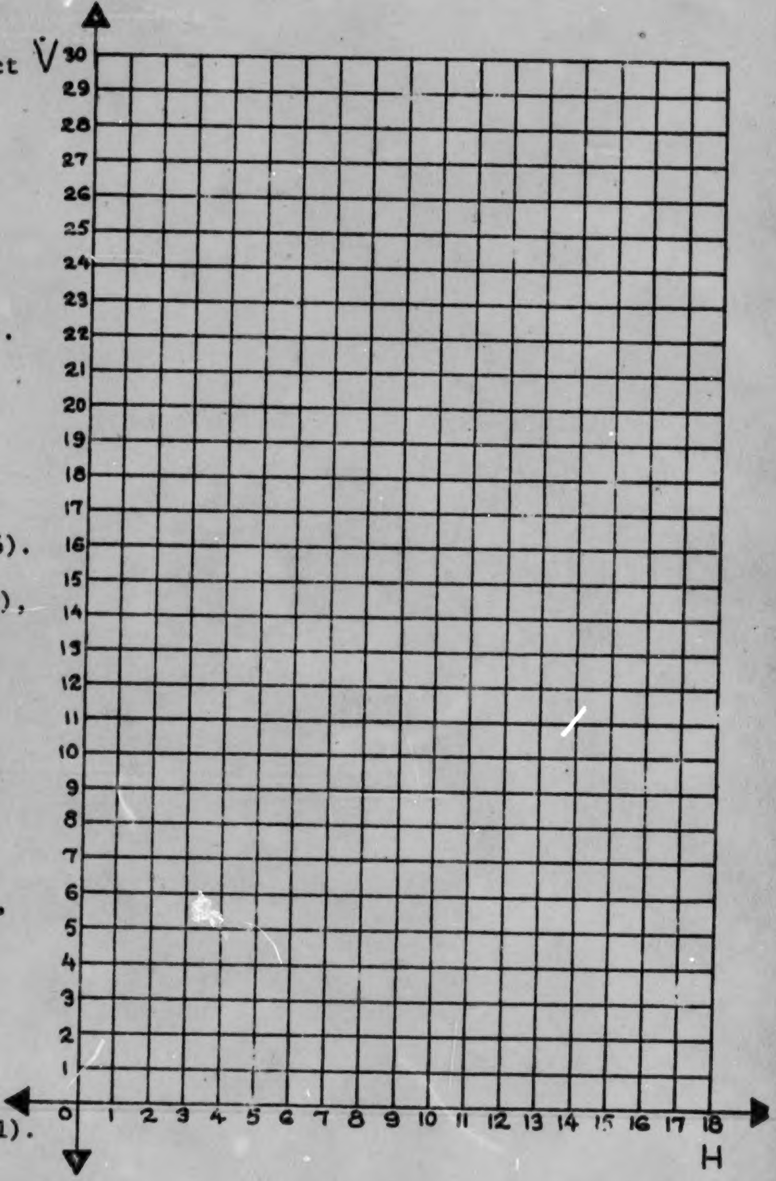
XII. (7,27), (8,26), (12,26), (13,25), (14,23).

XIII. (4,2), (3,1), (10,1), (10,8).

XIV. (5,24), (3,25), (2,24), (3,23).

XV. (10,21), (9,19), (9,18).

XVI. (10,12), (14,12), (13,11), (10,11).


V
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
H

2) On grid paper draw your own picture with points and line segments. Use ordered pairs to describe the picture. Give the description to a friend and see if she can graph your picture.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ______________________________ **Age** ________
Last First or
Grade ________

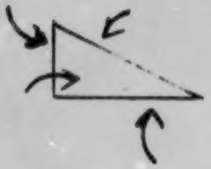
Content Area Geometry **Skills List No.** ____________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to know the relationship between the sides of a triangle.

Activities: What will be done, when, how much (time), by whom?

The teacher should guide the student through the attached activity, Sum Thing. As the student does the activity, the teacher must stress accuracy, as the activity suggests. As the student completes the activity, he will discover that the sum of any two sides of a triangle will exceed the third side. After the student completes this activity, go through the attached activity, When is a Triangle Acute, Right or Obtuse? As they go through the activity, they will discover how each triangle is related to the pythagoren theorem. The sum of the squares of the sides of a triangle equals the square of the hypoteneus.



Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to know the relationship between the sides of a triangle and classify triangles as being Acute, Right, or Obtuse.

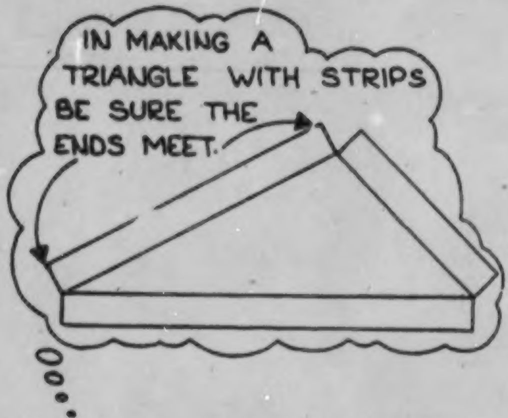
Total Days Participation ____________ **out of a possible** ____________

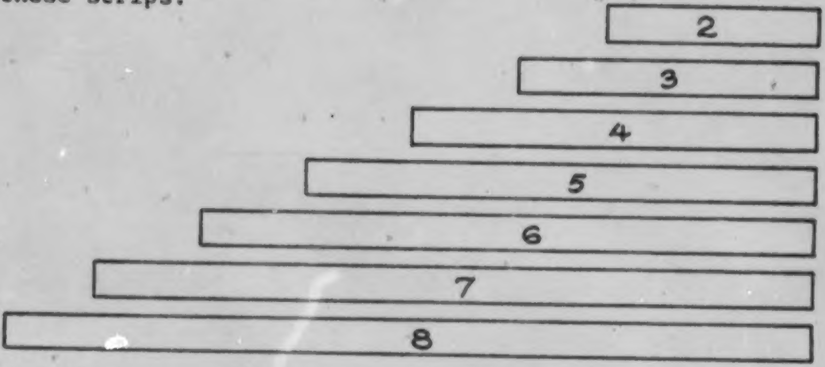
Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature Title

SUM THING

1) Use your scissors to cut out these strips.


IN MAKING A TRIANGLE WITH STRIPS BE SURE THE ENDS MEET.



2) Try to make a triangle with each set of strips. Draw a circle around the lengths which do make a triangle.

a) 2, 3, 4
b) 2, 3, 5
c) 2, 3, 6
d) 2, 3, 7
e) 2, 3, 8
f) 2, 4, 5
g) 2, 4, 6
h) 2, 4, 7
i) 2, 4, 8
j) 2, 5, 6
k) 2, 5, 7
l) 2, 5, 8
m) 3, 4, 5
n) 3, 4, 6
o) 3, 4, 7
p) 3, 4, 8

3) If two sides are 2 units and 3 units, what is the longest the third side can be?

____

4) If two sides are 3 units and 4 units, what is the longest the third side can be?

____

5) Complete this table.

USE YOUR ANSWERS FROM PROBLEM #2

Length of sides	Sum of two shortest sides	Length of longest side	A triangle? Yes or No
2, 3, 4	5	4	Yes
2, 3, 5			
2, 3, 6			
2, 3, 7			
2, 3, 8			
2, 4, 5			
2, 4, 6			
2, 4, 7			
2, 4, 8			
2, 5, 6			
2, 5, 7			
2, 5, 8			
3, 4, 5			
3, 4, 6			
3, 4, 7			
3, 4, 8			

6) Look at the table. What conclusion can you make about the lengths of the sides of a triangle?

____
____
____
____
____

WHEN IS A TRIANGLE ACUTE, RIGHT OR OBTUSE?

1) Suppose a triangle has a perimeter of 15 units. What could the lengths of the sides be if only whole number lengths are allowed?

Write each suggestion on the board, even though the three lengths might not form a triangle. Don't allow students to judge any answers. After all the suggestions have been made, ask the students to pick out the isosceles and equilateral triangles.

2) Have each students use a compass and straightedge to try to draw each of the suggested triangles, or provide the students with 15-unit strips of paper (with units marked) to cut into the lengths listed. (The seven possibilities are: 4,4,7; 5,5,5; 5,7,3; 4,5,6; 1,7,7; 2,7,6; 3,6,6) Students may discover that the sum of the two smaller lengths must be greater than the largest length. A class discussion following the construction activity should help them reach this conclusion.

3) List the seven possibilities in a table and have the students copy the table on their papers. (The last two columns will be filled later.) Have them use their protractors (or "right angle tester") to help classify each triangle as acute, right or obtuse.

PERIMETER OF 15

LENGTH OF SIDES	TYPE OF TRIANGLE		
4,4,7	OBTUSE		

4) Challenge the students to see if they can predict whether a triangle is acute, right or obtuse by knowing only the lengths of the sides.

To help them discover a method have the students draw or construct with paper strips all the possible triangles with a perimeter of 16 units, measure the angles to decide the type of each triangle, and write the results in a table.

The remaining blank columns in both tables should then be labeled "Sum of the squares of the two shorter sides" and "Square of the longest side." Have the students complete these columns (a calculator could be used) and look for a pattern to help them reach a conclusion.

IF THE SUM OF THE SQUARES OF THE TWO SHORTER SIDES IS GREATER THAN THE SQUARE OF THE LONGEST SIDE THE TRIANGLE IS ACUTE; IF EQUAL, THE TRIANGLE IS RIGHT; IF LESS THAN, THE TRIANGLE IS OBTUSE.

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ (Last) ______________ (First) **Age or Grade** ______________

Content Area Geometry **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to discover the sum of the angles in a triangle is 180°.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can guide the student through the attached activity, The Angles in Triangles. As the student goes through the activities, he will discover that the sum of the interior angles of any triangle will be 180°.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to know the sum of the interior angles of any triangle.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

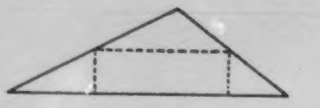
Teacher: ______________ (Signature) ______________ (Title)

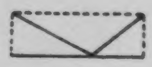
THE ANGLES IN TRIANGLES

"The sum of the measures of the angles of a triangle (180°)" is an important invariant in geometry. Students can discover and illustrate this with many activities.

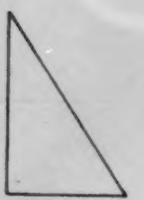
1) Find the midpoints of the two shorter sides of a triangle. Connect the midpoints. Draw perpendiculars from the midpoints to the third side. Fold on the three lines and the three angles will form a straight angle.

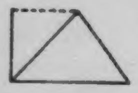
   Note: If an acute triangle is used any two sides may be bisected.

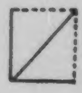




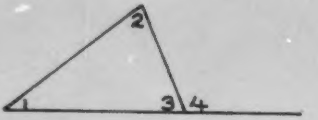
2) In any right triangle the two acute angles will fold to exactly cover the right angle. So the measure of the three angles equals the measure of two right angles.

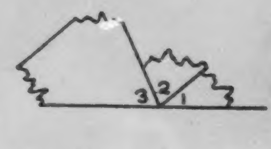




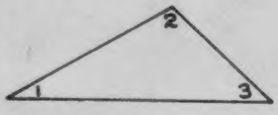


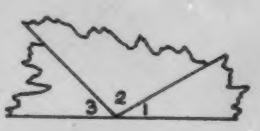
3) Angles 1 and 2 (the non-adjacent angles) will exactly cover angle 4 (the exterior angle of a triangle) forming a straight angle.





4) The three angles of a triangle can be arranged about a point to form a straight angle.

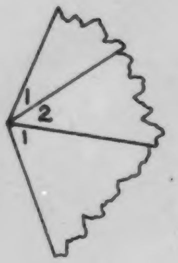




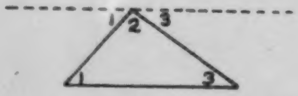
   a) **The Angle Game:**

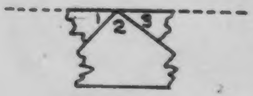
   Two players each draw a triangle and cut off the three angles. Player 1 chooses an angle and places the vertex on the dot. Player 2 plays an angle adjacent to the first angle. Play continues with the winner being the last player to place an angle without overlapping an angle.

   Note: Since the measure of the angles of two triangles is 360°, player two will always win since he will place the last angle.



5) Construct a parallel to a side through the opposite vertex. By noticing the alternate interior angles or by cutting and fitting the three angles together a straight angle is formed.

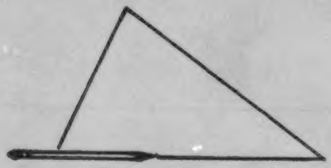




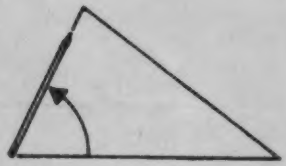
THE ANGLES IN TRIANGLES (CONTINUED)

6)

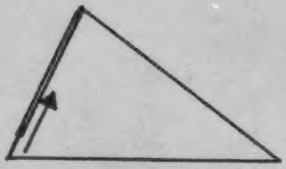
Use a pencil.



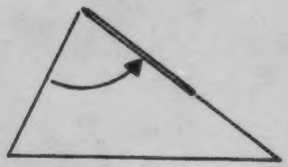
Rotate through an angle.



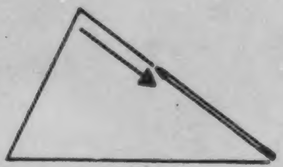
Slide to the next vertex.



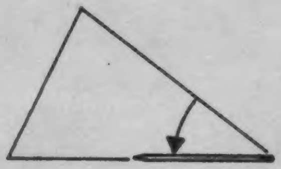
Rotate again.



Slide again.



Rotate.



The pencil is pointing in the opposite direction so it has rotated 180°.

7) Use a protractor to find and record the measures of the angles of several triangles.

TRIANGLE	MEASURE OF ∠A	MEASURE OF ∠B	MEASURE OF ∠C	SUM OF MEASURES OF ∠A, ∠B AND ∠C
1				
2				
3				

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area Geometry **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to identify the basic parts of a circle.

Activities: What will be done, when, how much (time), by whom?

The teacher and the student can use the attached activity, The Circle Board, to see the relationship between the various parts of a circle. As the student constructs the different parts, he will become acquainted with the basic concepts of the circle.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

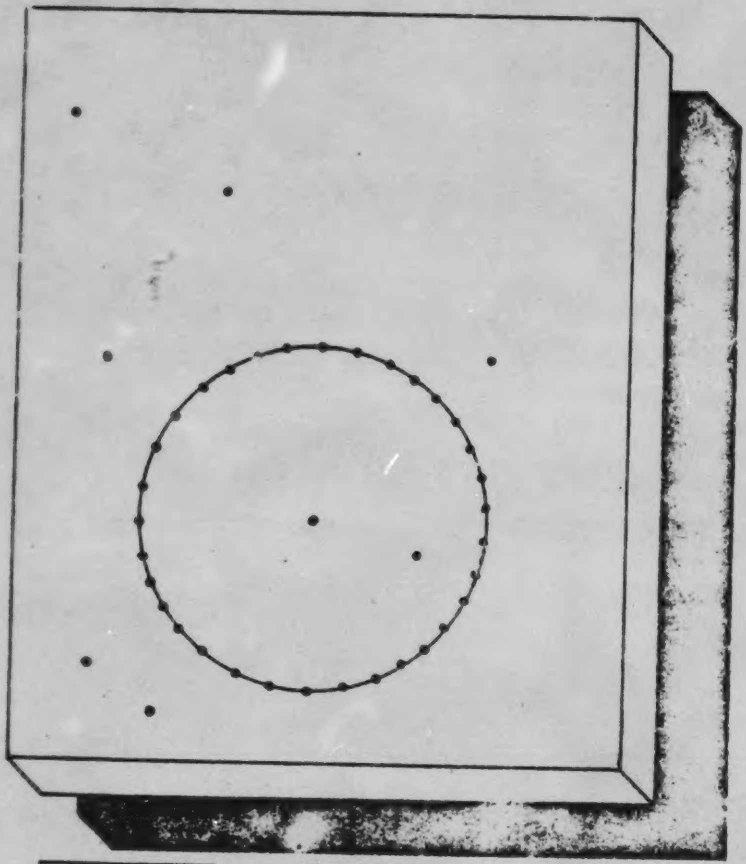
Given a teacher made test, the student will be able to identify the basic parts of a circle.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature Title

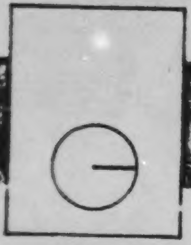
THE CIRCLEBOARD



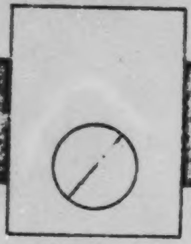
The circleboard can aid students to see properties of and to discover relationships about the circle. Use rubber bands to represent line segments. Students can measure lengths with a ruler and angles with a protractor. A large model can be effectively used for teacher demonstrations.

Use a piece of plywood and draw a circle of appropriate size.

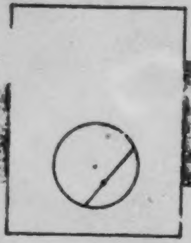
Equally space small nails or brads around the circumference. Put other nails at the center of the circle and at the other places on the board to show the line segments and angles related to the circle.



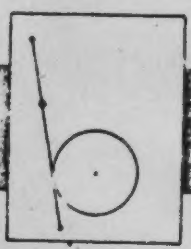
RADIUS



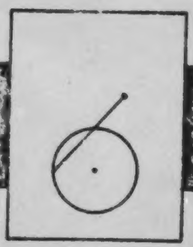
DIAMETER



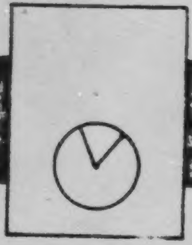
CHORD



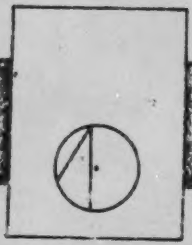
TANGENT



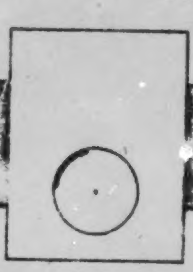
SECANT



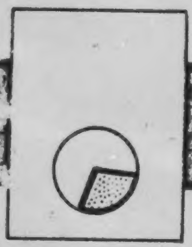
CENTRAL ANGLE



INSCRIBED ANGLE



ARC



SECTOR

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ District: ______________ Area ______________

For Dates ______________ to ______________

Student Name ______________ Age ______________
Last First
or
Grade ______________

Content Area Geometry ______________ Skills List No. ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to identify the more common prefixes associated with geometric figures.

Activities: What will be done, when, how much (time), by whom?

The attached crossword puzzle, Pre-Fix It, and the table of prefixes, both Latin and Greek, will be a good introduction to the idea of naming polygons. The student can then take a set of named polygons and compare their name and the prefix to see how it was derived. As the student uses the prefixes, he will become more familiar with the meaning of the terms. When the student becomes familiar with the terms, the attached activity, Don't Get Stuck On This, will reinforce the concept.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to identify the common Latin and Greek prefixes used for identifying geometric figures.

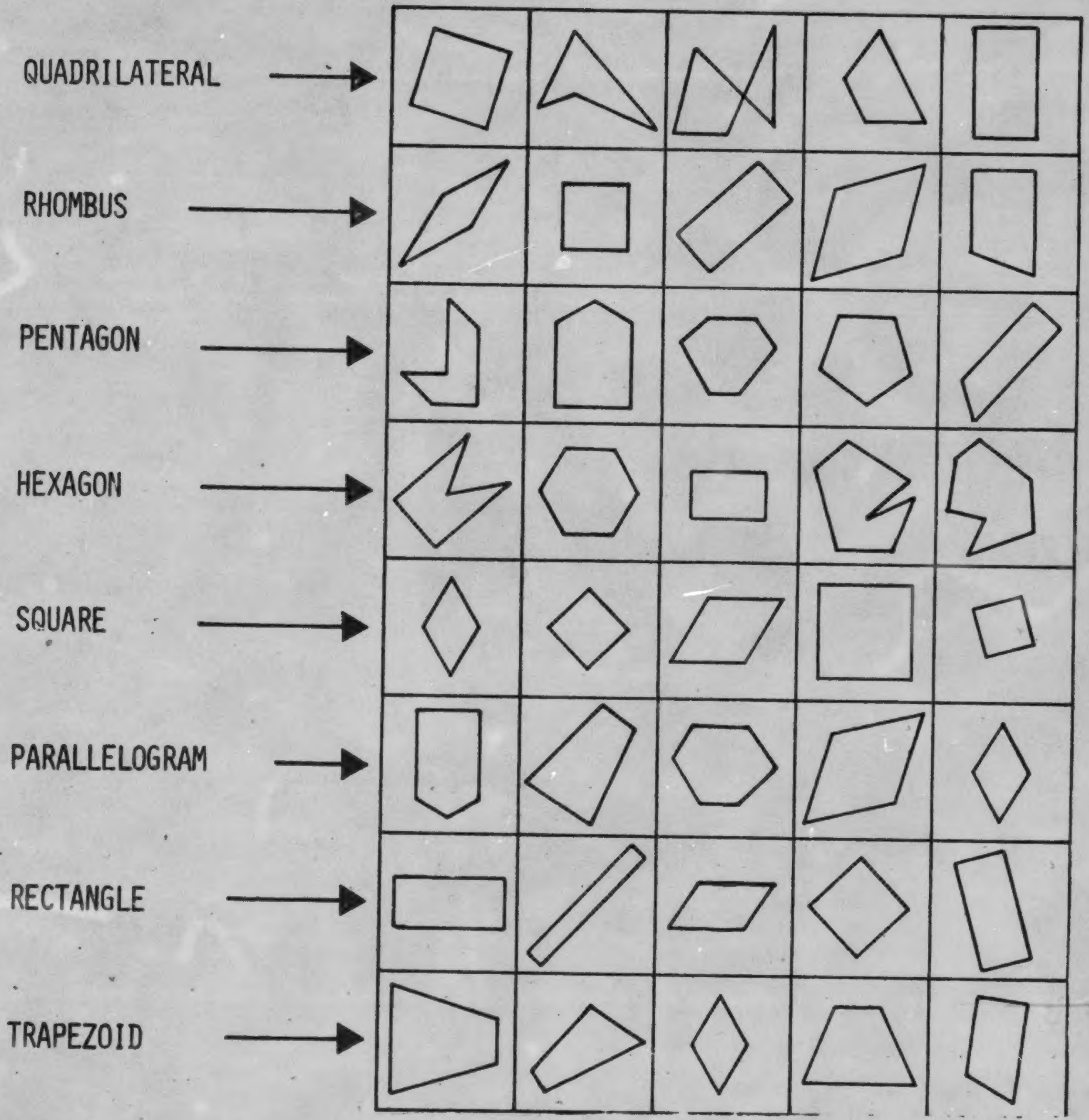
Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

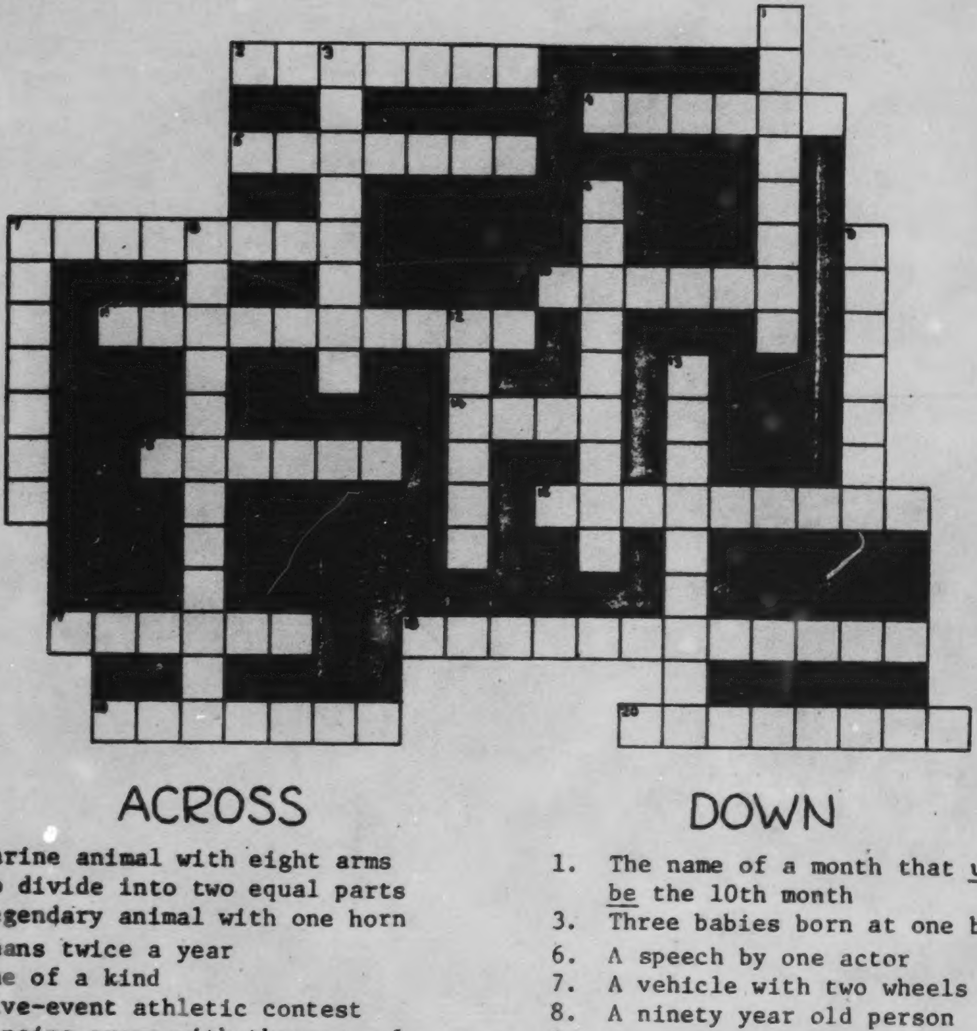
Teacher: ______________
Signature Title

DON'T GET STUCK ON THIS

Shade the whole box if it has an INCORRECT figure. The shading will cause a "desert" shape to occur.


QUADRILATERAL
RHOMBUS
PENTAGON
HEXAGON
SQUARE
PARALLELOGRAM
RECTANGLE
TRAPEZOID

PRE-FIX IT



ACROSS

2. **Marine animal with eight arms**
4. **To divide into two equal parts**
5. **Legendary animal with one horn**
7. **Means twice a year**
10. **One of a kind**
11. **Five-event athletic contest**
14. **Singing group with three people**
15. **Ten years**
16. **An animal with four legs**
17. **A two-piece bathing suit**
18. **A sound system with four channels**
19. **One hundred years**
20. **A five-sided building in Washington D. C.**

DOWN

1. The name of a month that used to be the 10th month
3. Three babies born at one birth
6. A speech by one actor
7. A vehicle with two wheels
8. A ninety year old person
9. An eyeglass for one eye
12. A musical interval of eight notes
13. To make four times as much

Prefixes

	Greek	Latin
one		*uni-*
two		*duo-*
three	*tri-*	*tri-*
four	*tetra-*	*quadr-*
five	*penta-*	*quint-*
six	*hexa-*	*sex-*
seven	*hepta-*	*septa-*
eight	*octa-*	*octa-*
nine		*nona-*
ten	*deca-*	*deci-*
twelve	*dodeca-*	*duodeci-*
twenty	*icosa-*	
100	*hecto-*	*centi-*
1000	*kilo-*	*milli-*

*Centi- and milli- also mean $\frac{1}{100}$ and $\frac{1}{1000}$, respectively.

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ **to** ____________

Student Name ____________ **Last** ____________ **First** ____________ **Age or Grade** ____________

Content Area Geometry **Skills List No.** ____________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to make models of common geometric figures and identify them by the interesection of a cylinder and a plane, a cone and a plane, and a sphere and a plane.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, Plane Intersections, to discover the geometric figures possible by this intersection. The activity calls for oatmeal boxes to use as the cylinder, but paper towel or toilet tissue rolls would also work. As the student progresses through the activity, he will see that different types of intersections will produce different figures.

The student will be able to get a circle, ellipse, rectangle, parallel lines, point, line segment, and part of an ellipse from the cylinder. The teacher can point out that the figures created with the use of the cone are commonly called conic sections.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to make and identify models of common geometric figures.

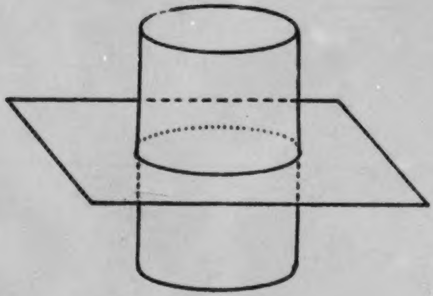
Total Days Participation ____________ **out of a possible** ____________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

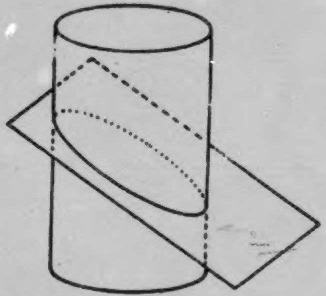
Teacher: ____________ **Signature** ____________ **Title**

PLANE INTERSECTIONS

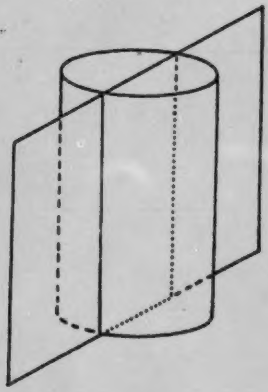
A cylindrical shaped oatmeal box can be used to illustrate the intersections of a plane with a cylinder. In each case have students predict the cross section that will be formed. The oatmeal box can actually be cut to show the cross sections. It would also be helpful to trace around the cross section, either on an overhead or on the chalkboard.



Circle



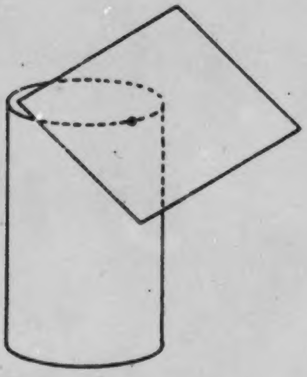
Ellipse



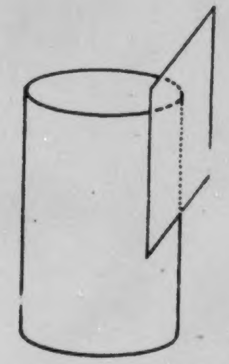
Rectangle
(if the bases are used)
Parallel line segments
(if no bases)

Have students predict how to get an intersection that is (1) a point (2) a line segment (3) part of an ellipse.

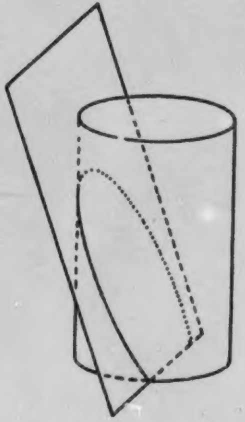
(1)



(2)



(3)

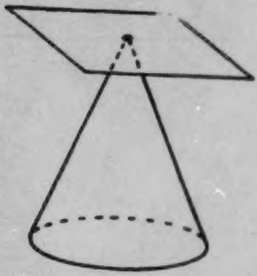


The intersections that are a point and part of an ellipse assume that the cylinder does not extend indefinitely.

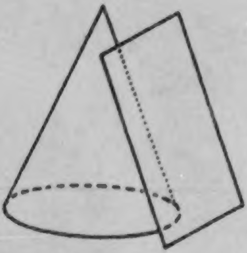
PLANE INTERSECTIONS

(CONTINUED)

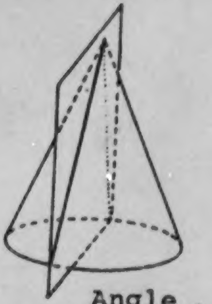
Similar demonstrations could be developed to illustrate the intersections of a plane and the cone. A cardboard cone used for flavored ice could be used as a model. These intersections assume an infinite cone with no base is being used.



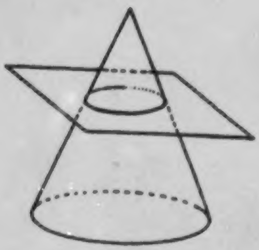
Point



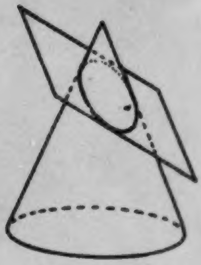
Line



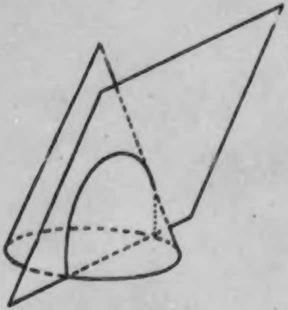
Angle



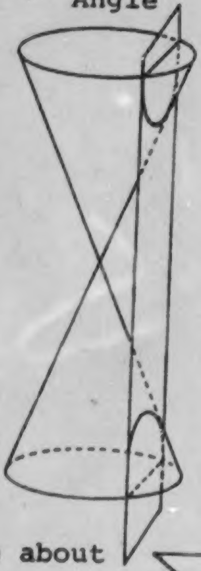
Circle



Ellipse



Parabola



Hyperbola

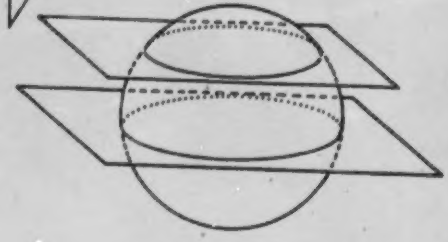
These are some important points to be made about the intersection of a plane and a sphere.

1) All cross sections will be circles.

2) The largest cross section is a great circle.

3) The cross sections could be related to the lines of latitude and longitude on a globe.

4) A plane tangent to a sphere intersects it in one point.



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ________ **District:** ________ **Area** ________

For Dates ________ **to** ________

Student Name ________
Last **First**

Age or Grade ________

Content Area Geometry **Skills List No.** ________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to relate percents to circle graphs.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, Going Around in Circles, is good for relating a part of the whole as a percent. The teacher can discuss the fraction that is represented by the percent, and then shade the appropriate part of the circle.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to relate percents to circle graphs.

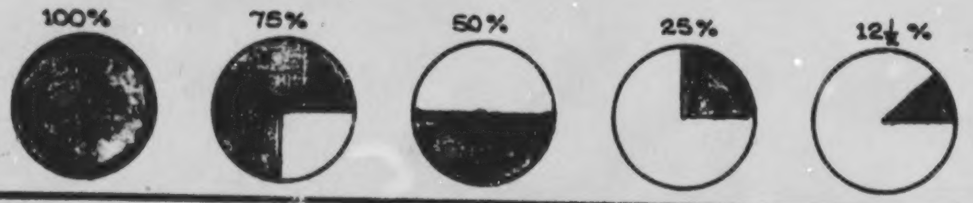
Total Days Participation ________ **out of a possible** ________

Criterion Attained: **Yes** ________ **No** ________ **Date** ________

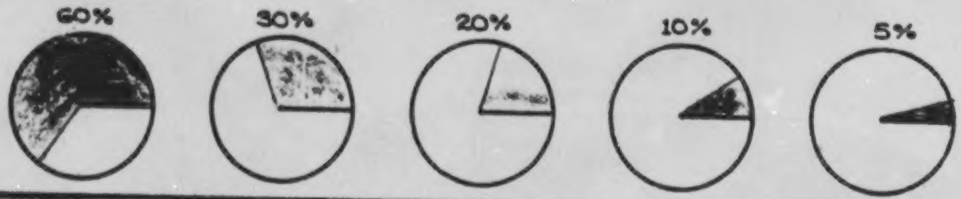
Teacher: ________
Signature **Title**

GOING AROUND IN CIRCLES

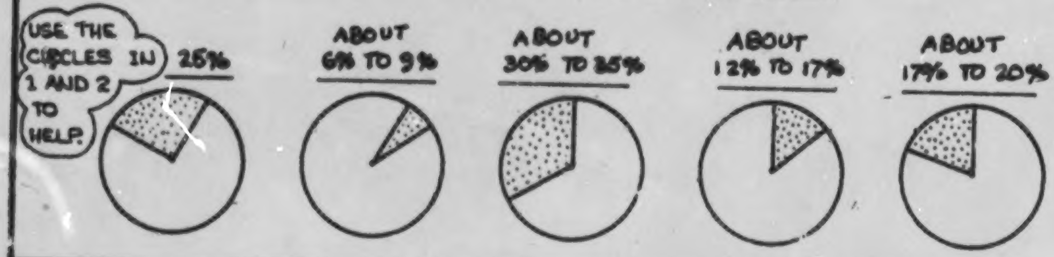
1. Shade the given percent of each circle.


100%
75%
50%
25%
12½ %

2. Shade (approximately) the given percent of each circle. Use the above circles to help you.



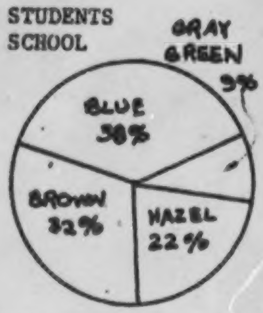
3. Estimate the percent for the shaded part of each circle.


USE THE CIRCLES IN 1 AND 2 TO HELP.
25%
ABOUT 6% TO 9%
ABOUT 30% TO 35%
ABOUT 12% TO 17%
ABOUT 17% TO 20%

4. Put the percents in the table onto the circle graph. Label the graph.

EYE COLOR OF STUDENTS IN LINCOLN SCHOOL

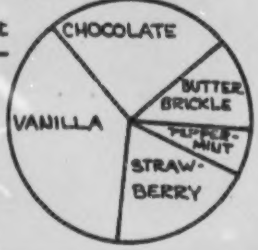
Color	Percent
Brown	31%
Blue	38%
Hazel	22%
Gray-Green	9%



5. Look at the circle graph and estimate the percents for each part. Put the percents in the table. Is their sum very close to 100%? ______

ICE CREAM SOLD AT NICE CREAM PALOUR

Flavor	Percent
Vanilla	37%
Strawberry	10%
Peppermint	6%
Butter Brickle	[illegible]
Chocolate	[illegible]
	98%



BEST COPY AVAILABLE

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ **Age** ______________
Last First **or**
Grade ______________

Content Area Geometry **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to classify triangles.

Activities: What will be done, when, how much (time), by whom?

The attached activity, Describing Triangles, is a good activity to go through the basic attributes of triangles. The student will discuss the possible combinations of types of angles possible in triangles, and combinations of side lengths possible. He will discover the concept of acute triangles, right triangles, obtuse triangles, equilateral triangles, isosceles triangles, and scalene triangles.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to classify traingles by their side measurement, or by their angle measurement.

Total Days Participation ______________ out of a possible ______________

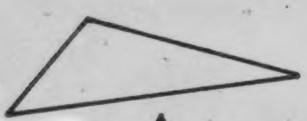
Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________________________
Signature Title

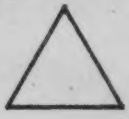
DESCRIBING TRIANGLES

Draw a line to match each figure with its description.

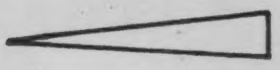
a)



b)



c)

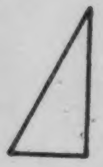


all sides have the same length (congruent)

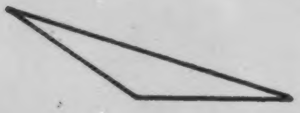
each side has a different length

two sides have the same length (congruent) and the third side has a different length

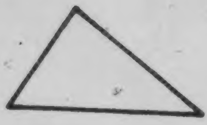
d)



e)



f)

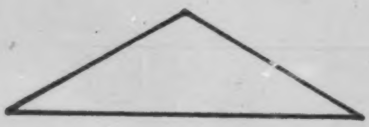


all angles are acute angles

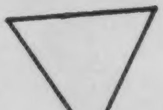
one angle is a right angle and the other two angles are acute

one angle is an obtuse angle and the other two angles are acute

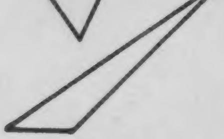
g)



h)



i)



all three angles have the same measure (congruent)

each angle has a different measure

two angles have the same measure (congruent) and the third angle has different measure

DESCRIBING TRIANGLES

(CONTINUED)

Answer yes or no for these questions. If you answer yes write the letter of the triangle that shows the properties. If one is not shown draw a triangle that has the properties.

Can a triangle have

1) a right angle and no congruent sides?	Yes	d
2) an obtuse angle and two sides congruent?	Yes	e,g
3) three right angles?	No	
4) all acute angles with exactly two of the angles congruent?	Yes	c
5) two obtuse angles?	No	
6) a right angle and two sides congruent?	Yes	Not shown
7) an obtuse angle and no congruent sides?	Yes	a,i
8) all acute angles and all angles congruent?	Yes	b,h

Triangles are usually classified in two ways, by the angles and by the sides.

By angles

1) acute . . . all acute angles

2) right . . . one right angle

3) obtuse . . . one obtuse angle

By sides

1) equilateral . . . all sides congruent (also all angles congruent)

2) isosceles . . . two sides congruent (also two angles congruent)

3) scalene . . . no sides congruent (also no angles congruent)

(In a strict sense an isosceles triangle has at least two sides congruent, thus an equilateral triangle is also isosceles.)

Classify each of the triangles (a) - (i) as either acute, right or obtuse. Then classify each as equilateral, isosceles or scalene.

a)	obtuse	scalene	f)	acute	scalene
b)	acute	equilateral	g)	obtuse	isosceles
c)	acute	isosceles	h)	acute	equilateral
d)	right	scalene	i)	obtuse	scalene
e)	obtuse	isosceles			

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ ____________ **Age** ____________
Last First
or
Grade ____________

Content Area Geometry **Skills List No.** 585

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to plot points on a grid.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, Scale Sketches, as an introduction to plotting points on a grid. The student will notice that the scales are not consecutive, but maintain a constant rate. The teacher can also bring up the concept of ordered pairs.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to plot points on a grid.

Total Days Participation ____________ out of a possible ____________

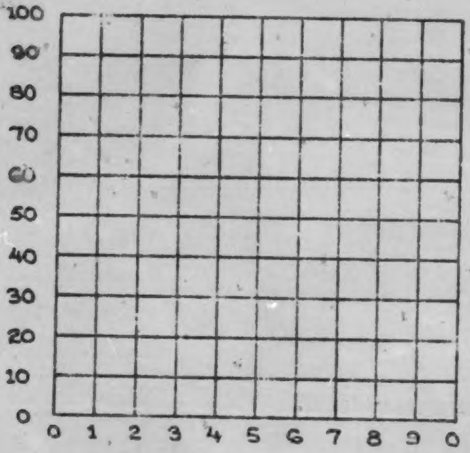
Criterion Attained: Yes ____________ No ____________ Date ____________

Teacher: ____________ ____________
Signature Title

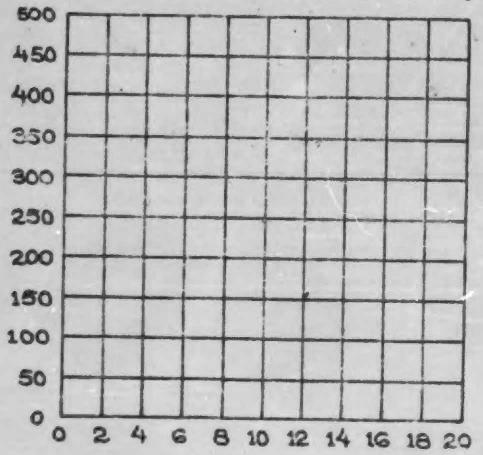
SCALE SKETCHES

Connect each set of points with straight line segments. Do not connect points that have "Stop" between them. Cross off each ordered pair as you use it.

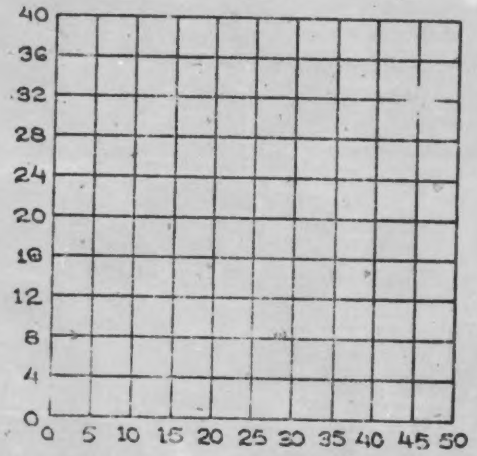
A. (5,60)(5,80)(6,80)(6,60)(5,60)Stop
(4,0)(4,20)(2,40)(2,60)(4,60)(4,50)
(3,50)(4,40)Stop(6,0)(6,20)(7,30)(7,70)
(6,70)Stop(3,60)(3,70)(2,100)(3,100)
(4,70)(4,100)(5,100)(5,80)Stop(6,60)
(6,50)(7,50)Stop


100
90
80
70
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 0

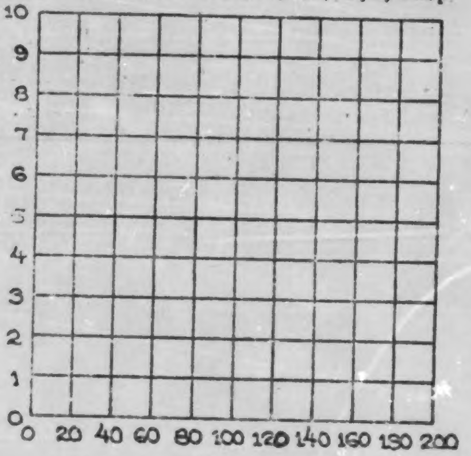
B. (10,250)(10,400)(8,450)(6,200)(6,150)
Stop(14,200)(14,150)(12,100)(14,100)
(16,150)(16,200)Stop(12,250)(18,300)
(20,300)(18,250)(8,150)(12,250)Stop
(10,250)(8,250)(6,200)Stop(10,150)
(6,50)(4,50)(4,100)(16,400)(16,450)
(18,500)(18,400)(16,350)(15,300)Stop


500
450
400
350
300
250
200
150
100
50
0
0 2 4 6 8 10 12 14 16 18 20

C. (15,8)(15,40)(20,35)(15,36)Stop(0,8)
(15,36)(10,12)(0,8)Stop(10,0)(0,8)(50,8)
(40,0)Stop(15,36)(50,8)Stop(15,12)
(40,16)Stop(0,4)(10,0)(15,4)(20,0)
(25,4)(30,0)(35,4)(40,0)(50,4)Stop


40
36
32
28
24
20
16
12
8
4
0
0 5 10 15 20 25 30 35 40 45 50

D. (20,5)(40,5)(40,4)(180,2)(180,0)(160,0)
(160,1)(20,3)(20,5)Stop(60,10)(140,10)
(160,9)(160,7)(120,5)(120,4)(80,4)(80,5)
(40,7)(40,9)(60,10)Stop(60,8)(80,9)
(100,8)(120,9)(140,8)(120,7)(100,8)
(80,7)(60,8)Stop(80,6)(100,7)(120,6)
(80,6)Stop(20,0)(20,2)(160,4)(160,5)
(180,5)(180,3)(40,1)(40,0)(20,0)Stop


10
9
8
7
6
5
4
3
2
1
0
0 20 40 60 80 100 120 140 160 180 200

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Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ____________ **District:** ____________ **Area** ____________

For Dates ____________ to ____________

Student Name ____________ Last ____________ First ____________ **Age** ____________ or **Grade** ____________

Content Area Geometry **Skills List No.** 594

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to read and interpret a circle graph.

Activities: What will be done, when, how much (time), by whom?

The attached activity, Thinking Through Pie Charts, gives the student a chance to read a circle graph and make some deductions from it. Some other questions besides the main ones asked can also be discussed by the student and the teacher.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to read and interpret circle graphs.

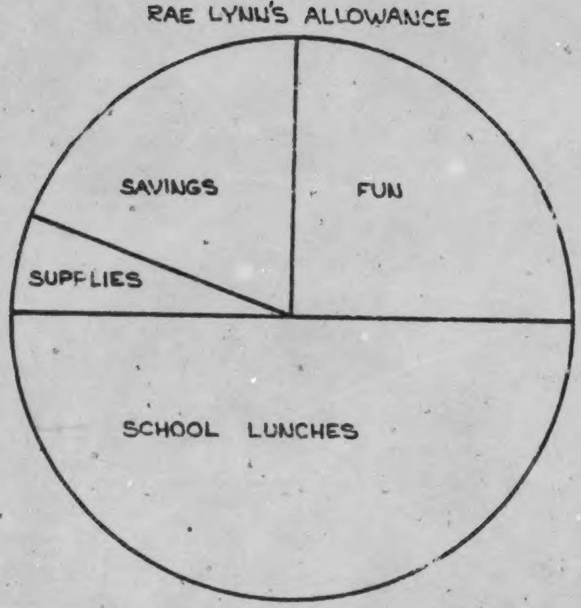
Total Days Participation ____________ out of a possible ____________

Criterion Attained: Yes ____________ No ____________ Date ____________

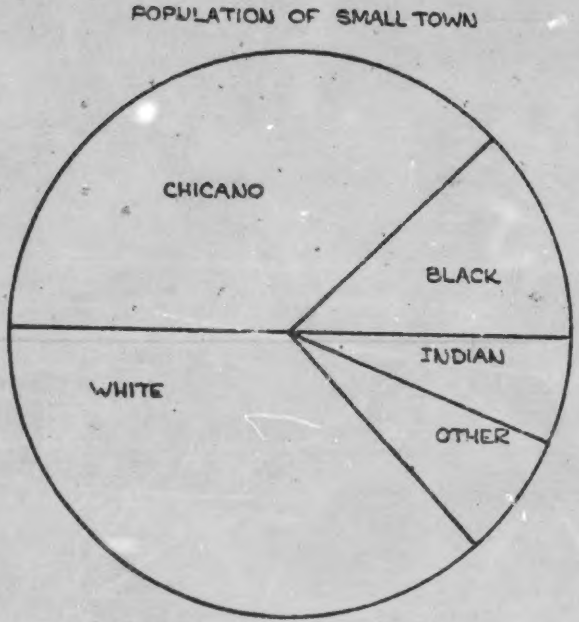
Teacher: ____________ Signature ____________ Title

THINKING THROUGH PIE CHARTS

The circular region represents Rae Lynn's allowance. The parts of the circle show what fraction of her allowance is spent on each item.



1. What fraction of her allowance does she spend on school lunches? ________
2. Does she save more money than she spends for "fun?" ________
3. From the graph, can you tell if she saves more than $1.00? ______
4. Suppose Rae Lynn's weekly allowance is $5.00. How much does she spend each week on school lunches? ________ Fun? ________ Savings? ________ Supplies? ________



5. How many people live in Smalltown? ________
6. Are there more Indians than Blacks? ________
7. Are there more Chicanos than Whites in Smalltown? ________
8. Suppose the town has 8,000 people. About how many Blacks would live there? ______ Chicanos? ______ Indians? ______
9. What does the part labeled "other" represent? ________

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ ______________ **Age or Grade** ______________
Last First

Content Area Geometry **Skills List No.** 612

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to read number line scales.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, Mouth Control, is a good one for the student to become acquainted with the concept of reading number line scales. As the student goes through the activity, she will have to be aware of being able of dividing the scale into intervals. The teacher can discuss the concept of interpolation with the student.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to read number line scales.

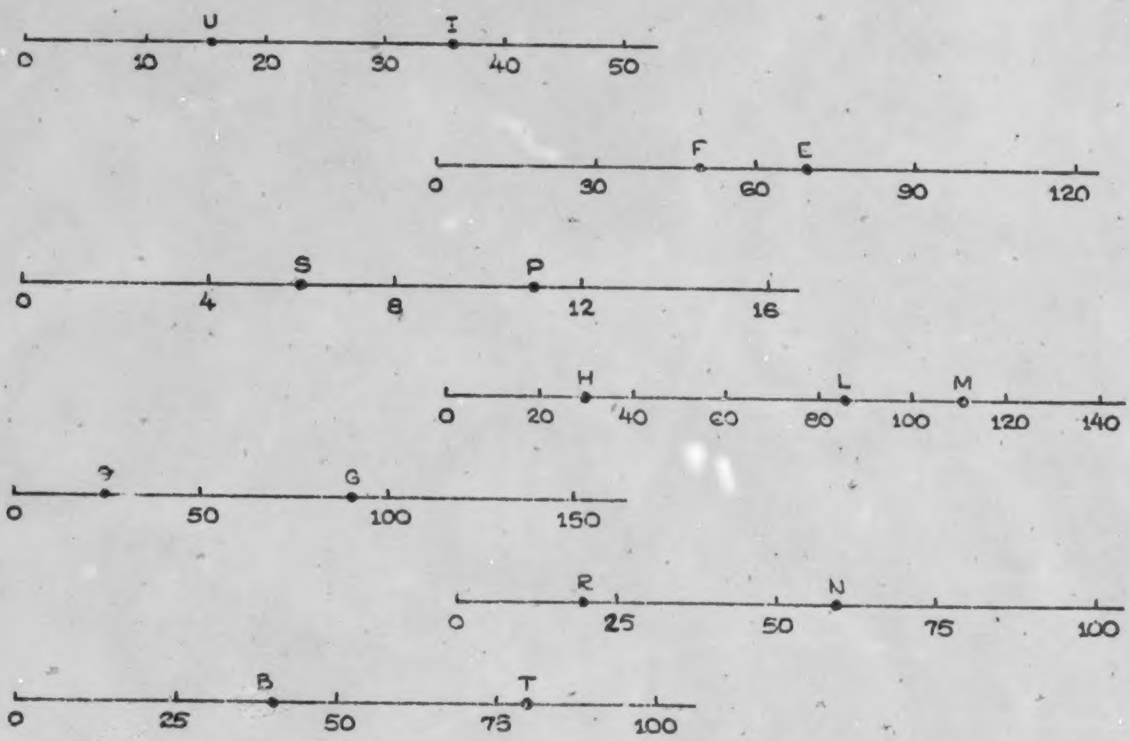
Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: Yes ______________ **No** ______________ **Date** ______________

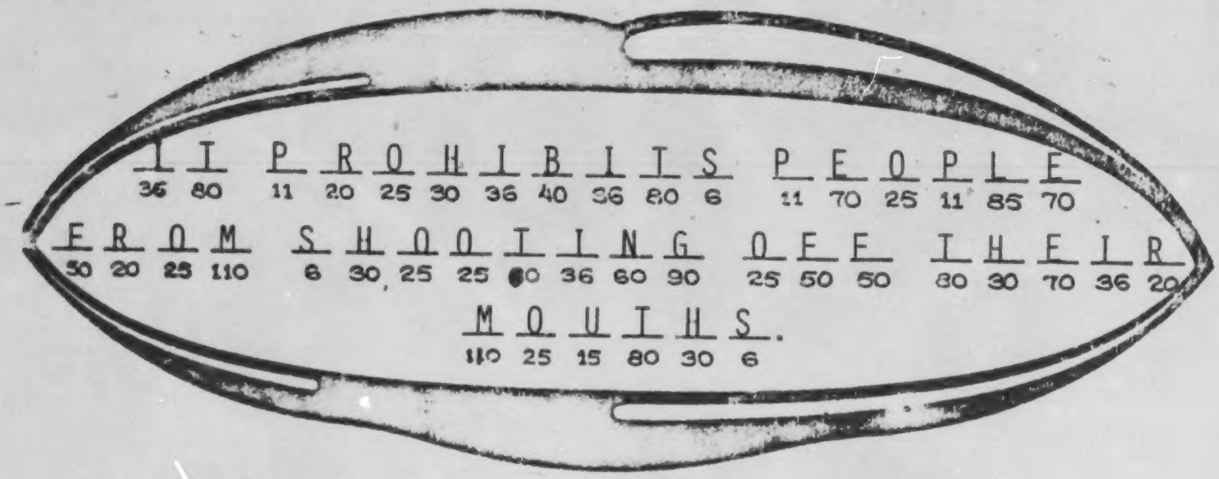
Teacher: ______________________________
Signature Title

MOUTH CONTROL

Look at each point named by a letter. Estimate its value. Write the value below the point. Find the value in the message below. Write the correct letter above it.


U
I
0
10
20
30
40
50
F
E
0
30
60
90
120
S
P
0
4
8
12
16
H
L
M
0
20
40
60
80
100
120
140
F
G
0
50
100
150
R
N
0
25
50
75
100
B
T
0
25
50
75
100

DID YOU HEAR ABOUT THE NEW MOUTH CONTROL LAW?



I	T	P	R	O	H	I	B	I	T	S	P	E	O	P	L	E
36	80	11	20	25	30	36	40	36	80	6	11	70	25	11	85	70

F	R	O	M	S	H	O	O	T	I	N	G	O	F	F	T	H	E	I	R
50	20	25	110	6	30	25	25	80	36	60	90	25	50	50	80	30	70	36	20

M	O	U	T	H	S.
110	25	15	80	30	6

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ (Last) ______________ (First) **Age** ______ **or Grade** ______

Content Area Geometry **Skills List No.** 612

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to label a scale and plot points.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, Scale and Plot, to introduce the idea of plotting points on a number line. The student will have to examine the information to develop a number line that will be appropriate to the information for the graph. As the student goes through the exercise, he will become familiar with this concept.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to label scales and plot points from tables of information.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________ (Signature) ______________ (Title)

SCALE & PLOT

For each exercise, label the scales so the largest number shown will be near the top of the scale.

Put a dot on the scale for each number. Put the corresponding letter beside each dot.

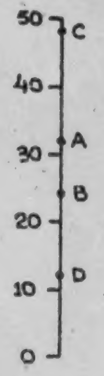
EXAMPLE

A) 32

B) 24

C) 48

D) 12


50
C
40
A
30
B
20
D
10
0

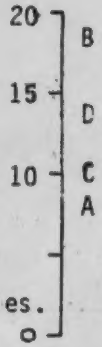
1.

A) 8

B) 18

C) 10

D) 14


20
B
15
D
10
C
A
0

(Students might find other reasonable scales. These are just suggested answers.)

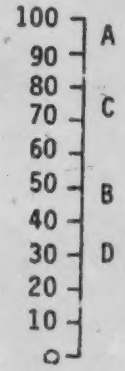
2.

A) 95

B) 50

C) 75

D) 30


100
A
90
80
70
C
60
50
B
40
30
D
20
10
0

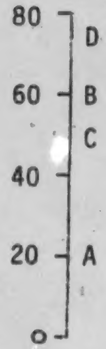
3.

A) 20

B) 60

C) 50

D) 75


80
D
60
B
C
40
20
A
0

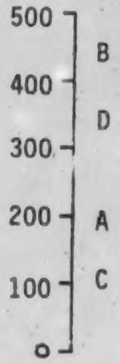
4.

A) 200

B) 450

C) 100

D) 350


500
B
400
D
300
200
A
100
C
0

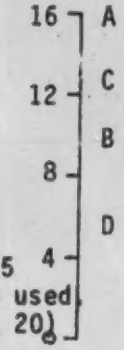
5.

A) 16

B) 10

C) 13

D) 6


16
A
C
12
B
8
D
4
0

(Multiples of 5 could also be used 0, 5, 10, 15, 20)

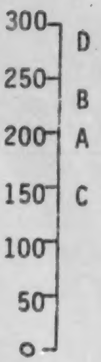
6.

A) 200

B) 225

C) 150

D) 280


300
D
250
B
200
A
150
C
100
50
0

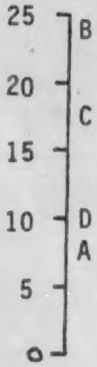
7.

A) 8

B) 24

C) 18

D) 10


25
B
20
C
15
10
D
A
5
0

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ______________

For Dates ______________ to ______________

Student Name ____ **Age** ______________
Last First

or
Grade ______________

Content Area Geometry **Skills List No.** 612

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to complete the scales on number line graphs.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, Completing Scales, to introduce the concept of number line graphs. The scales have different values to each space, and the student can see the differences as she goes through the activity. The teacher can use the activity to discuss with the student the need for different scales. He can also discuss the reasons for marking the scale with a piece cut out.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to complete a number line scale.

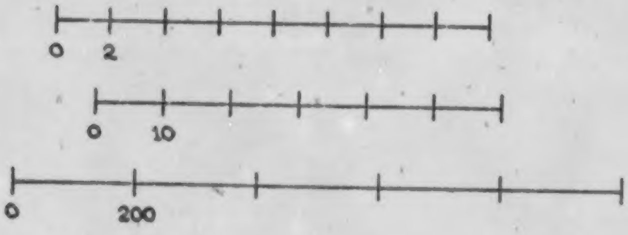
Total Days Participation ______________ **out of a possible** ______________

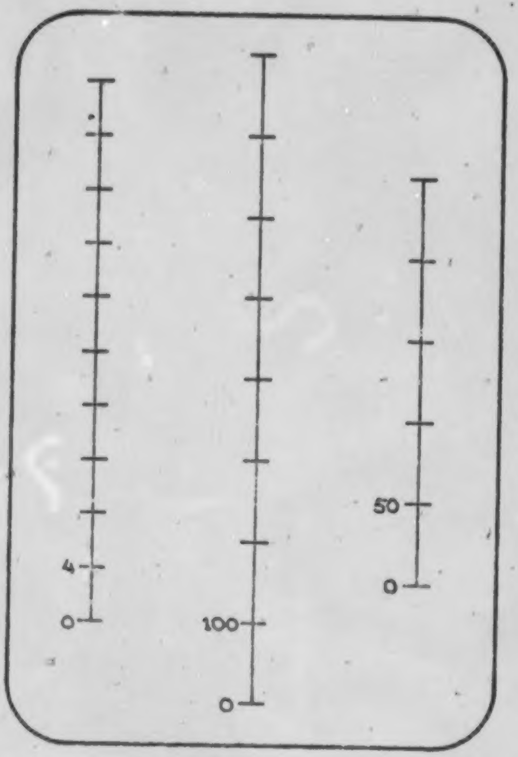
Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ____
Signature Title

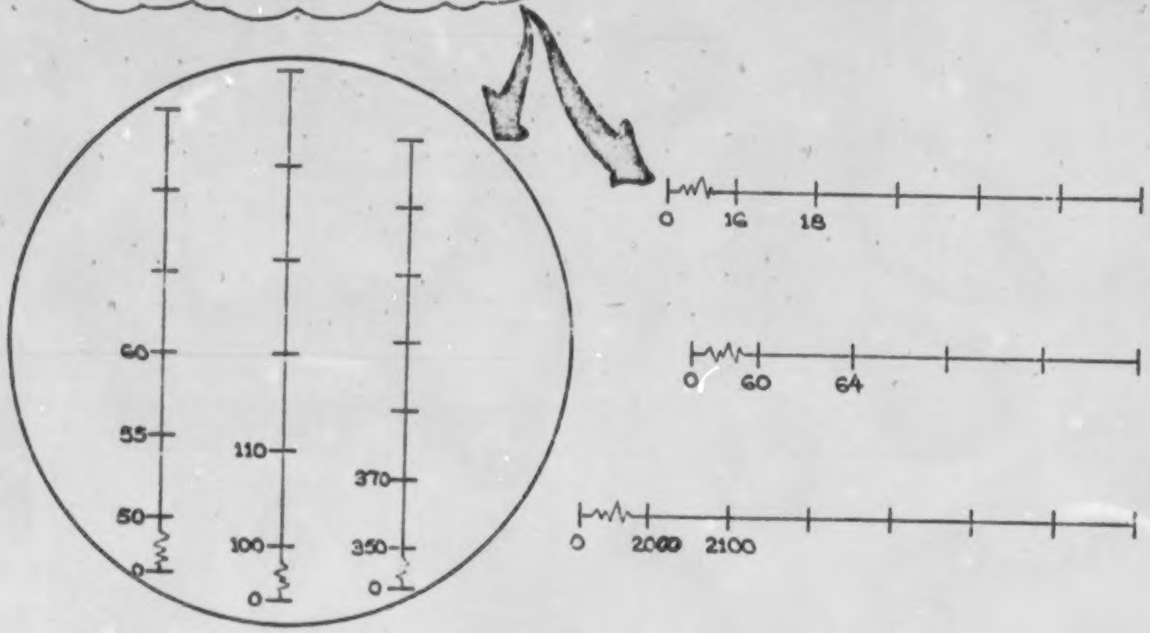
COMPLETING SCALES

EACH OF THE 12 NUMBER LINES HAS A DIFFERENT SCALE. FOLLOW THE PATTERN. PUT A NUMBER BY EACH EQUALLY SPACED MARK ON THE LINES.





THESE SCALES HAVE A PIECE CUT OUT. IT IS SHOWN BY ≀ OR ⊢∿⊣. TWO OR MORE NUMBERS ARE GIVEN TO HELP YOU GET STARTED.


60
55
50
0
110
100
0
370
350
0
0
16
18
0
60
64
0
2000
2100

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ to ______________

Student Name ____ **Age** ____________
Last First **or**
Grade ____________

Content Area Geometry **Skills List No.** 594

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to use a circle graph to show data.

Activities: **What will be done, when, how much (time), by whom?**

The teacher and the student can use the attached activity, It's An Emergency, to go through the process of making a circle graph. The student will be developing the concept of parts of a whole. The teacher will be pointing out the significance of developing ratios from the information, and how to represent that as part of a circle.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to make a circle graph from a set of data.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

IT'S AN EMERGENCY
ACTIVITY VI

Mr. Johnson grouped the students' fire calls together.

TYPE OF FIRE	JUDY		DOUG		OTTO		JULIE	
	NUMBER OF FIRES	AMOUNT OF DAMAGES						
CAR/TRUCK	2	$ 750	4	$ 3800	2	$ 90	3	$ 700
HOUSE/APT/BUILDING	5	$ 2300	6	$ 900	6	$ 27,100	3	$ 10,000
FIELD/TRASH/SAWDUST	4	$ 0	5	$ 550	2	$ 0	5	$ 10
OTHER	4	$ 25	8	$ 30	3	$ 0	1	$ 0

He showed Judy how to make a circle graph to show the types of fires for her week.

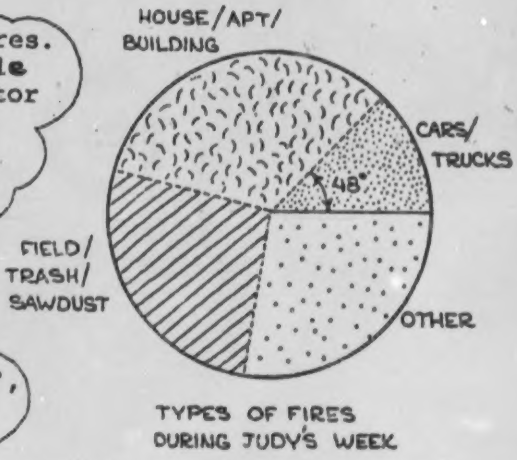
First find the total number of fires ... 15

Write a ratio that compares the type of fire to the total ... $\frac{2}{15}$, $\frac{5}{15}$, $\frac{4}{15}$, $\frac{4}{15}$

The entire circle represents the week's fires. Use the ratios to find the part of the circle for each type of fire. Judy used a calculator to help her.

$\frac{2}{15} \times 360° = 48°$ $\frac{5}{15} \times 360° = 120°$

$\frac{4}{15} \times 360° = 96°$



Use a protractor to mark off angles of 48°, 120°, 96°, 96° to represent the number of each type of fire.

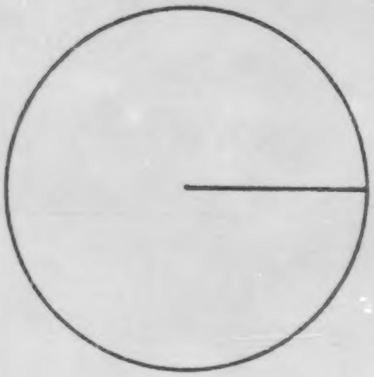
TYPES OF FIRES DURING JUDY'S WEEK

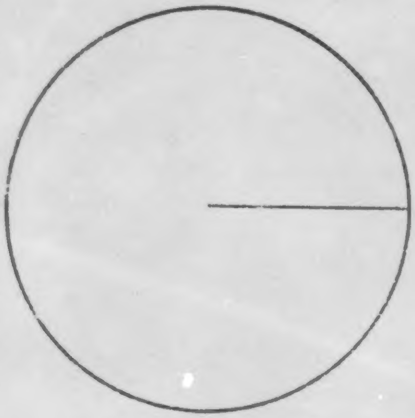
IT'S AN EMERGENCY

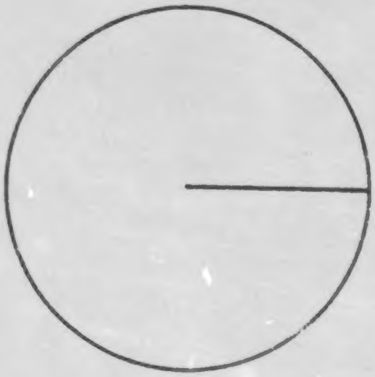
ACTIVITY VI

(CONTINUED)

1) Use the circles below to make circle graphs to show the types of fires for Doug's week, Otto's week and Julie's week. Label each graph.



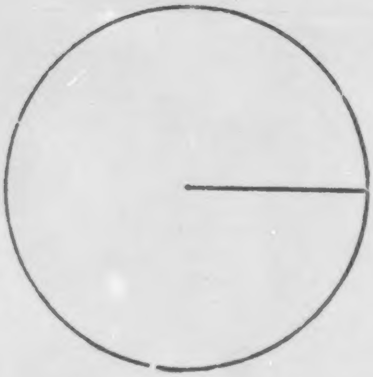




2) Do these graphs tell you which week had the most field/trash/sawdust fires? ___ _____

3) Use a circle graph to show the part of the total damages each type of fire caused for the four weeks.

Round the damages to the nearest thousand dollars before writing the ratios.



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ (Last) ______________ (First) **Age** ______ or **Grade** ______

Content Area Geometry **Skills List No.** 606

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to take a set of raw data, compile it into a table, and draw a bar graph.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, It's An Emergency, is a good one for the teacher to go through with the student to develop the process of taking pieces of raw information, compiling it into a table, and developing the bar graph to represent the information.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to make a bar graph from raw data.

Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________ (Signature) ______________ (Title)

IT'S AN EMERGENCY

ACTIVITY I

How many assistance or fire runs are made in your town each week? How much fire damage is reported in your town each month?

Four students in Mr. Johnson's math class decided to check the fire report in the local newspaper each night for a month and record the emergency calls. Each student selected one week of the month to report on. They agreed to list the types of fires.

JUDY'S REPORT

CALLS	TALLY	NUMBER
FIRES	𝍸 𝍸 𝍸	15
FALSE ALARMS	𝍸 𝍸 ||||	14
ASSISTANCE	||||	4

TYPE OF FIRE	NUMBER	DAMAGES
CAR/TRUCK	2	$ 750
HOUSE/BUILDING	5	$ 2300
FIELD/TRASH/SAWDUST	4	$ 0
OTHER	4	$ 25
TOTAL	15	

DOUG'S REPORT

CALLS	TALLY	NUMBER
FIRES	𝍸 𝍸 𝍸 𝍸 |||	23
FALSE ALARMS	𝍸 𝍸 |	11
ASSISTANCE	𝍸 𝍸 ||	12

TYPE OF FIRE	NUMBER	DAMAGES
CAR/TRUCK	4	$ 3600
HOUSE/BUILDING	6	$ 900
FIELD/TRASH/SAWDUST	5	$ 550
OTHER	8	$ 30
TOTAL	23	

OTTO'S REPORT

CALLS	TALLY	NUMBER
FIRES	𝍸 𝍸 |||	13
FALSE ALARMS	𝍸 |||	8
ASSISTANCE	𝍸 𝍸 ||	12

TYPE OF FIRE	NUMBER	DAMAGES
CAR/TRUCK	2	$ 90
HOUSE/BUILDING	6	$ 27,100
FIELD/TRASH/SAWDUST	2	$ 0
OTHER	3	$ 0
TOTAL	13	

JULIE'S REPORT

CALLS	TALLY	NUMBER
FIRES	𝍸 𝍸 ||	12
FALSE ALARMS	𝍸 ||	7
ASSISTANCE	|	1

TYPE OF FIRE	NUMBER	DAMAGES
CAR/TRUCK	3	$ 700
HOUSE/BUILDING	3	$ 10,000
FIELD/TRASH/SAWDUST	5	$ 10
OTHER	1	$ 0
TOTAL	12	

IT'S AN EMERGENCY

ACTIVITY I

(CONTINUED)

Collect the fire report from your local newspaper for a week or use the clippings below for Eugene, Oregon. Use the chart below to make a report for the week. Check off each call as you tally it.

TALLY AS A FIRE.

FIRE RUNS

(From 10 a.m. Monday until 10 a.m. Tuesday)

10:28 a.m. Monday - 375 E. Seventh Ave., smoke in building caused by burned out fan motor in heating system, no damage.

11:38 a.m. - Delta Road and Valley River Drive, car fire, caused by electrical short in wiring, $25 damage.

12:03 p.m. - Behind 2557 Alder St., sparks from power line, undetermined damage.

DO NOT RECORD AN AMOUNT IN THE DAMAGE COLUMN.

(From 10 a.m. Tuesday until 10 a.m. Wednesday)

5:45 p.m. Tuesday - 1414 Alder St., clothes caught fire in dryer, $25 damage.
6:27 p.m. - 600 Goodpasture Island Rd., first aid assistance.
11:39 p.m. - 1823 Moss St., garbage fire.
11:56 p.m. - 1740 Highway 99 North, no fire.

(From 10 a.m. Wednesday until 10 a.m. Thursday)

12:25 p.m. Wednesday - 1330 Oak Patch Rd., grass fire, no damage.
5:13 p.m. - 2795 Garfield St., fire in oven, no damage.
6:22 p.m. - Behind 1900 River Rd., grass fire, no damage.

(From 10 a.m. Thursday until 10 a.m. Friday)

3:23 p.m. Thursday - 2250 Burlington St., grass fire, no damage.
9:27 p.m. - 695 Ruskin St., smoke set off alarm.
9:45 p.m. - 663½ Madison St., pan of food on stove burned, no damage.

(From 10 a.m. to 10 p.m. Friday)

10:11 a.m. Friday - Jefferson Street Bridge, standby for fatal truck accident.
2:35 p.m. - West Seventh Place and Seneca Street, wash down paint in street.
3:31 p.m. - 14th Avenue and Columbia Street, false alarm at University of Oregon dormitory.
4:46 p.m. - South end of Crenshaw Road, brush fire, no damage.

(From 10 p.m. Friday to 10 p.m. Saturday)

10:39 p.m. - Fourth and Willamette streets, grass fire, caused by careless smoker, no damage.
1:06 a.m. - 1950 River Rd., grass and fence fire, cause under investigation, $20 damage.
3:58 p.m. - 3900 W. First Ave., fuel silo fire caused by spontaneous combustion, $4,500 damage.
4:37 p.m. - 5000 Willamette St., false alarm.
5:28 p.m. - 31st and Willamette streets, assist ambulance at scene of possible heart attack.
5:40 p.m. - 2485 W. 22nd Ave., fire in dryer, no damage.
6:01 p.m. - 5000 Willamette St., false alarm.
6:55 p.m. - 200 block of W. Third Ave., grass fire caused by cigarette, no damage.
7:57 p.m. - Roosevelt Blvd. and Highway 99 North, illegal burning.

(From 10 p.m. Saturday until 10 a.m. Monday)

10:57 p.m. Saturday - 1365 Willamette St., trash fire, no damage.
4:32 a.m. Sunday - 15th and University streets, alarm malfunction.
8:19 a.m. - 325 E. 18th Ave., apartment fire caused by smoking in bed, $3,500 damage.
5:32 p.m. - 10th and Willamette streets, false alarm.
7:59 p.m. - 1488 W. Seventh Ave., first aid run.
8:44 p.m. - 17th and Hilyard streets, malicious false alarms.
12:37 a.m. Monday - 2775 Central Blvd., house fire, caused by rags with linseed oil, $50 damage.

______ REPORT
(YOUR NAME)

CALLS	TALLY	NUMBER
FIRES		
FALSE ALARMS		
ASSISTANCE CALLS		

TYPE OF FIRE	NUMBER	DAMAGES
CAR/TRUCK		
HOUSE/BUILDING		
FIELD/TRASH/SAWDUST		
OTHER		

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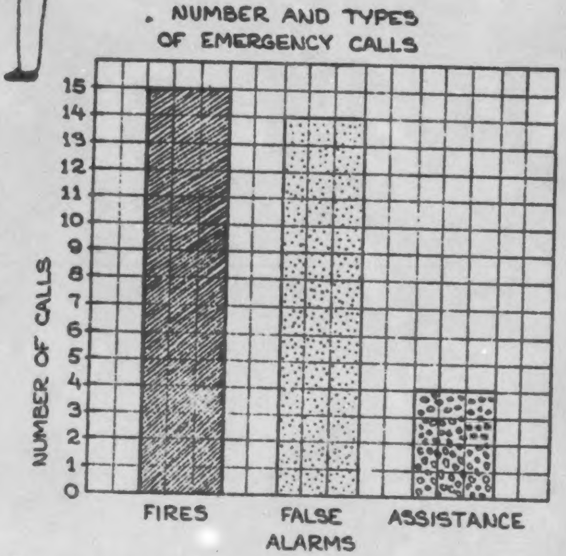
IT'S AN EMERGENCY

ACTIVITY II

Mr. Johnson helped Judy make a bar graph of the results in her tally table.



Since the largest number was 15, they made 15 equally-spaced marks on the vertical scale. They labeled each mark.

On the horizontal scale, they marked off three bars each the same width to represent the three types of calls. Equal spaces were left between the bars. Each bar was labeled.

The height of each bar was equal to the number of calls.

Finally they wrote a title for the graph.

1) Make a similar bar graph to show the results in Doug's tally table.

The grid paper will help you draw the graph.

Be sure to start the scale at zero. Equally space the marks. Carefully label the graph. Write a title for the graph.

2) Ask your teacher for some grid paper.

Make a bar graph which shows the results from your tally table.

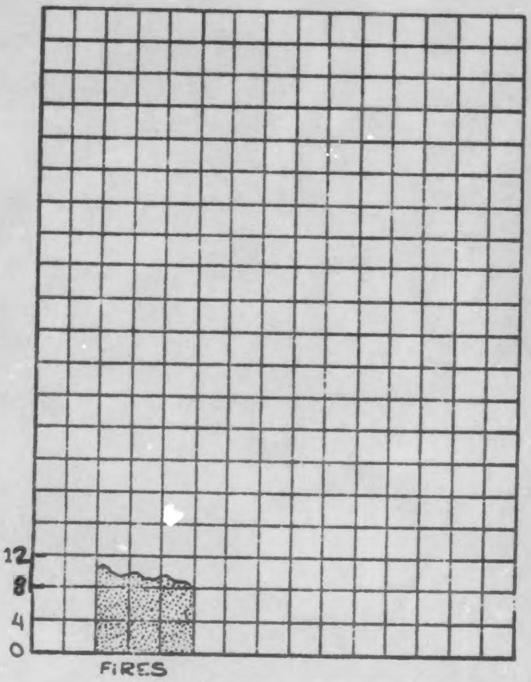
IT'S AN EMERGENCY
ACTIVITY III

Otto suggested they make a bar graph to post on the hall bulletin board. The graph would compare the number of each type of emergency call for the month.

1) Use the information in each student's report to complete the table below. Find the total of each row. Be sure to include Judy.

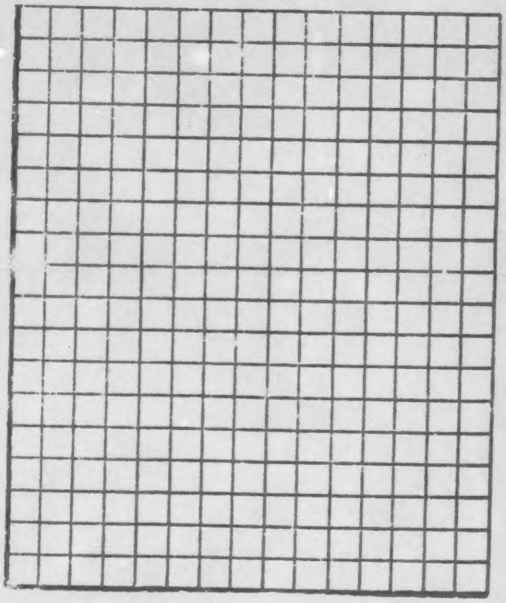
TYPE OF CALL	JUDY	DOUG	OTTO	JULIE	TOTAL
FIRES	15				
FALSE ALARMS	14				
ASSISTANCE	4				

IN ORDER TO GRAPH THE LARGEST TOTAL ON THE GRID, OTTO SAID THAT EACH MARK ON THE SCALE SHOULD EQUAL FOUR UNITS.



2) Complete the bar graph above. Make each bar the same width. One bar is started for you. Finish labeling the scale and write a title for the graph.

3) Terry recorded the emergency calls for another week. She found: Fires - 16, False alarms - 3, Assistance - 4. Combine Terry's findings with the totals of the four students above. Complete the bar graph to the right to show the calls for five weeks.



Pick a scale that lets you graph the largest number.

Start the scale at zero and equally space the markings. Label the scales and write a title for the graph.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ District: ______________________ Area ____________

For Dates ______________ to ________________

Student Name ____ Age ____________
Last First or
Grade ____________

Content Area Geometry Skills List No. 606

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to make a bar graph from a set of information.

Activities: What will be done, when, how much (time), by whom?

The two attached activities are good to introduce the concept of a bar graph. As the student goes through Sisters and Brothers, the idea of collecting and assembling data will be experienced. It also shows two variations of the bar graph, which can be used to demonstrate different pieces of information. A Time to be Born, is another activity that allows a bar graph to be born. Have the student place the information in the chart and finish identifying the graph.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to make bar graphs from sets of information.

Total Days Participation ______________ out of a possible ____________________

Criterion Attained: Yes ____________ No ______________ Date ________________

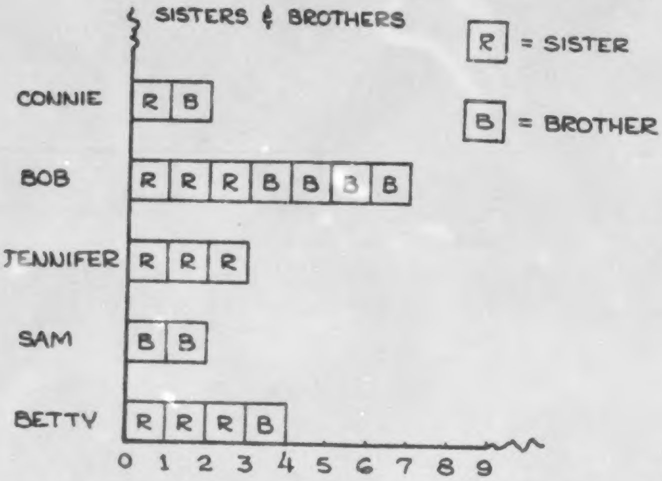
Teacher: ____
Signature Title

SISTERS AND BROTHERS

Materials needed: red squares, blue squares, poster with axes and student names

Activity:

1) As they come into the room, have students get a red square for each of their sisters and a blue square for each of their brothers. Count half-sisters or half-brothers as sisters or brothers.
2) Have students place the squares next to their names. (Gummed labels work well.)

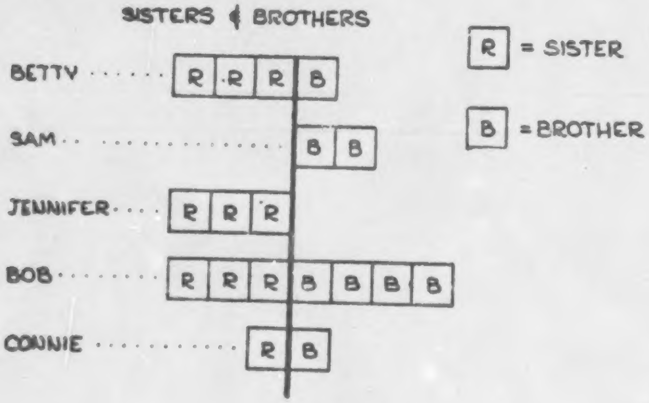


This activity can be used as a transition from pictographs to bar graphs.

The following points can be made to students:

1) If each square is read as a separate symbol, the graph is a pictograph.
2) If the squares are grouped together and the scale is used then the graph resembles a bar graph.

Another organization can be used to display the data. This technique can also be used for (a) number of girls or boys playing in various sports, (b) number of girls or boys interested in various occupations, (c) number of yes or no (true or false) answers given to a list of questions, (d) number of students that like or dislike various subjects, (e) number of girls and boys born in various months, etc. An example of this technique can often be found in an atlas. The highest and lowest points are often shown extending up or down from the center line which represents sea level.



The following questions could be asked:

Suppose you want to know who has the most sisters and brothers.
Which graph would be better, top or bottom? ______________

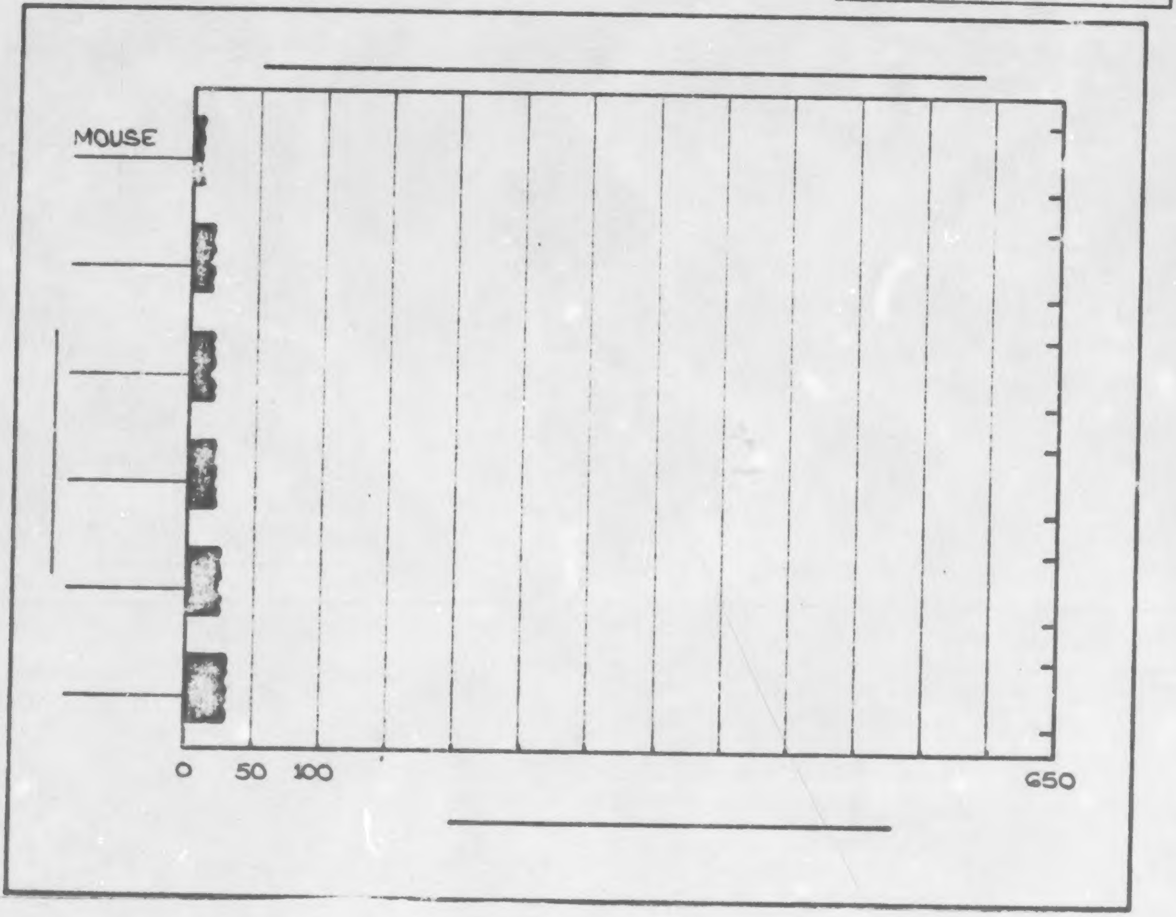
Suppose you want to know who has the most brothers.
Which graph would be better? ______________

A TIME TO BE BORN

This table shows the different lengths of time from conception to birth for six types of animals. The differences can be shown more dramatically in a bar graph. Use the table and follow these steps to complete the bar graph.

1. Finish writing the kinds of animals on the left of the graph.
2. Finish numbering the horizontal scale.
3. Finish the bar for each animal.
4. Name the horizontal scale and label the vertical list of animals.
5. Write a title for the graph.
6. Write in the source of the data.

GESTATION OF ANIMALS	
Animal	Length in Days
Mouse	20
Kangaroo	42
Tiger	105
Elk	250
Camel	402
Elephant	645



Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ **to** ______________

Student Name ______________ Last First **Age** ______ **or** **Grade** ______

Content Area Geometry **Skills List No.** ______________

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to make a pictogram from a set of data.

Activities: **What will be done, when, how much (time), by whom?**

The attached activity, They Melt in Your Mouth, is a good one to use in developing the idea of a pictorgram type of graph. As the student works through the activity, he will become aware of the things involved in the process of making the graph, and the significance of the information located on the graph. When the M & M activity is completed, Forest Fires Are a Real Burn is a good follow-up activity. The student should be able, with the teachers supervision, to complete the pictogram from the information in the table.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to make pictograms from sets of information.

Total Days Participation ______________ **out of a possible** ______________

Criterion Attained: **Yes** ______________ **No** ______________ **Date** ______________

Teacher: ______________________________
Signature Title

THEY MELT IN YOUR MOUTH

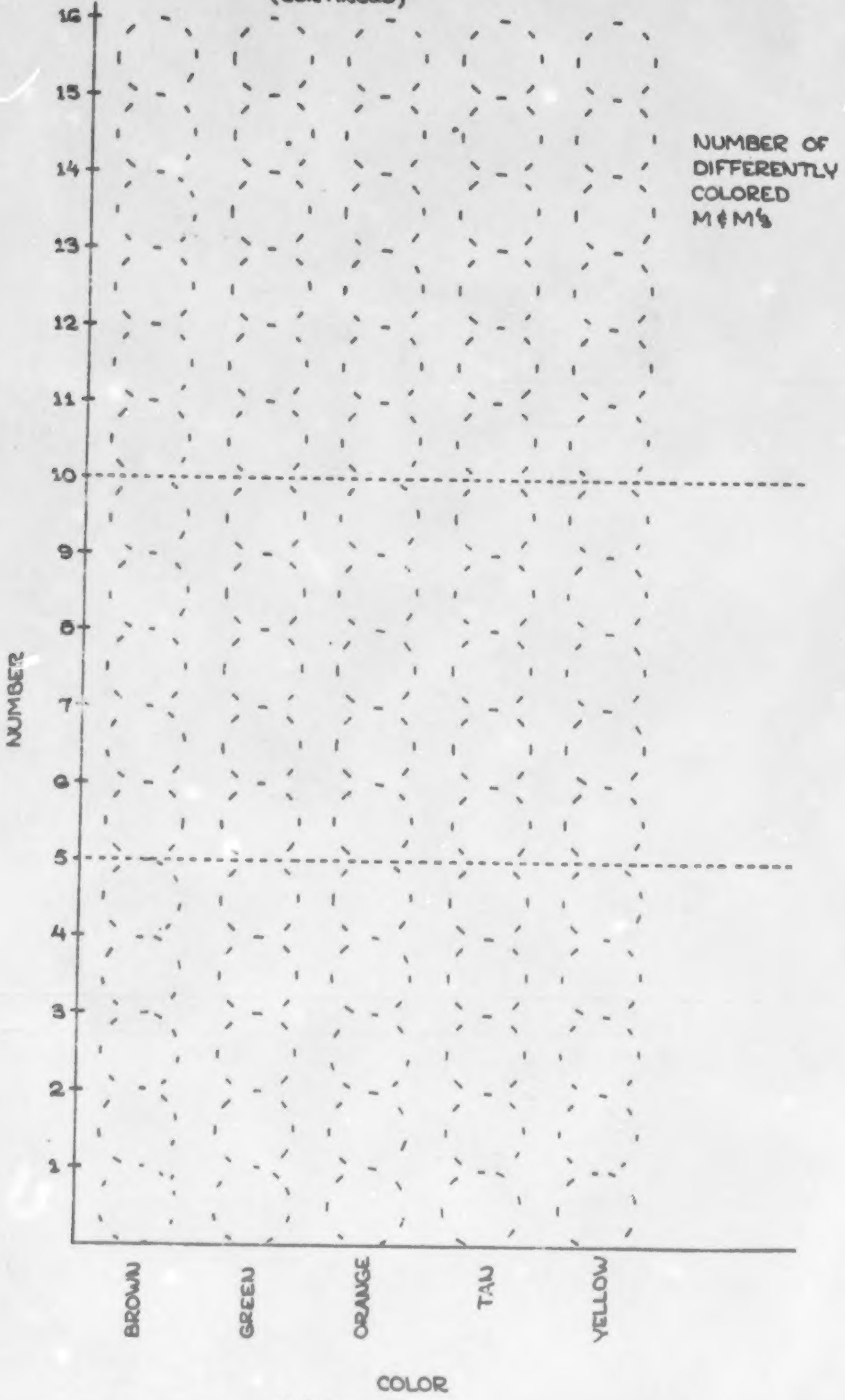
Materials: Package of M&M's

Activity:

1) DON'T OPEN THE PACKAGE YET!
2) M&M's come in five colors: brown, green, orange, tan and yellow. Guess what color occurs most often in your package. ________
   Least often. ________
3) Open the package.
4) DON'T EAT ANY YET!
5) Arrange the pieces on the graph on the next page.
6) Record the total number and the number of each color.
   Total _____ brown _____ green _____ orange _____
   tan _____ yellow _____
7) Which color occurs most often? __________
8) Is this the same as your neighbor's? _______
9) Which color occurs least often? ________
10) Is this the same as your neighbor's? __________
11) On the graph carefully mark the highest circle for each color.
12) Shade the circles below it.
13) NOW YOU CAN EAT THE M&M'S.

THEY MELT IN YOUR MOUTH

(CONTINUED)



FOREST FIRES ARE A REAL BURN

The table to the right gives the number of forest fires that occurred in one area last summer.

Use the data in the table to complete the pictograph below.

1) Decide how many fires to let each symbol stand for. Write this number in the key.

2) For each month, draw the correct number of symbols. Be sure the symbols are equally spaced and lined up vertically. Try to make each symbol the same size and shape.

FOREST FIRES

MONTH	FIRES
MAY	20
JUNE	14
JULY	22
AUGUST	18
SEPTEMBER	45

FOREST FIRES

MAY	
JUNE	
JULY	
AUGUST	
SEPTEMBER	

KEY: 🔥 = ______ FIRES

NAME ______________________

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: __________ **District:** __________ **Area** __________

For Dates __________ **to** __________

Student Name __________ **Last** **First** **Age or Grade** __________

Content Area Geometry **Skills List No.** __________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find an approximate value for the mathematical constant, π.

Activities: What will be done, when, how much (time), by whom?

The attached activity, A Very Special Ratio, and Pi's the Limit, are good activities to introduce the student to the concept of Pi. As the student goes through the activities, he will find that Pi is not some magical number, but is, instead, a particular ratio that has a very sound mathematical basis.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to show a knowledge of the concept of Pi.

Total Days Participation __________ **out of a possible** __________

Criterion Attained: Yes __________ **No** __________ **Date** __________

Teacher: __________
Signature **Title**

a Very Special Ratio

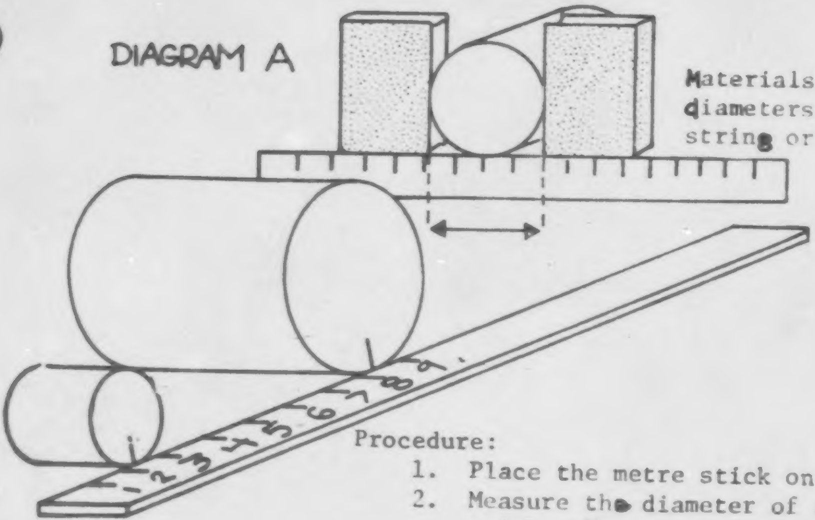


DIAGRAM A

DIAGRAM B

Materials: Metre stick, cans of varying diameters, rolls of tape, small wheels, string or paper to wrap around objects

Procedure:

1. Place the metre stick on a level surface.
2. Measure the diameter of a can by placing it on the metre stick. Record on the chart. (See Diagram A.)
3. Wrap string or paper around the can one time and measure the length of the string or paper.
4. Record the measurement in the chart.
5. Carefully roll a can along the metre stick for one complete turn to check for accuracy in step 3. (See Diagram B.)
6. Complete the chart. Use a calculator to find the values correct to two decimal places.

DIAMETER OF CAN	LENGTH OF STRING	LENGTH + DIAMETER	LENGTH − DIAMETER	LENGTH × DIAMETER	LENGTH ÷ DIAMETER

In which column are the numbers nearly the same? __________

If you were careful in carrying out your experiments, you found that the circumference (length of the string) divided by the diameter of the can is about 3.1 or 3.2. This can be expressed as the ratio, circumference : diameter = 3.1:1, which is approximately 3:1.

To represent this ratio we use the Greek letter π (pi). π is pronounced "pie."

π cannot be exactly expressed as a decimal, no matter how many decimal places are used.

π is approximately

3.14159265358979323846264338327950288409716939937510

PI's THE LIMIT

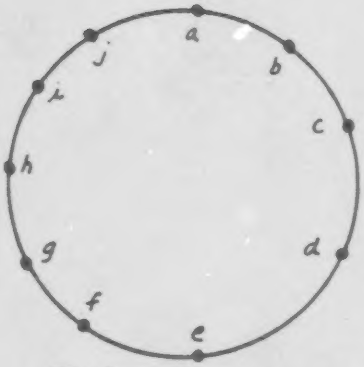


DIAGRAM I

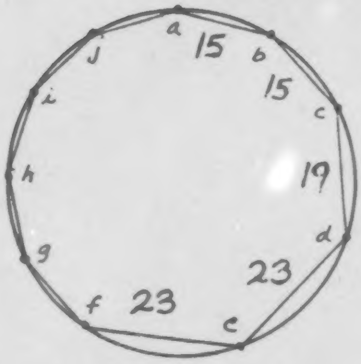


DIAGRAM II

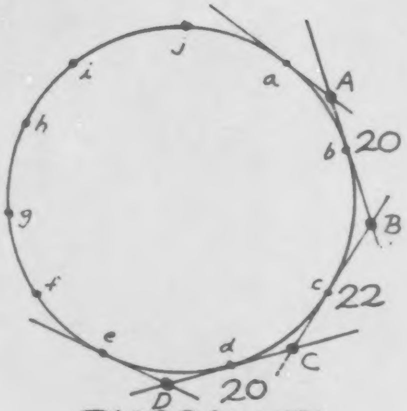


DIAGRAM III

I. Draw a circle with a radius of at least 6 cm. Mark between 8 and 15 points on the circle any distance apart. They need not be equally spaced. Label the points with lower case letters. (See Diagram I.)

II. Connect consecutive points with line segments. Measure each segment and record the length in millimetres next to the segment. Add the measures and record the total in the top part of the table below. (See Diagram II.)

Record the diameter of the circle in millimetres.

III. Outside the circle draw line segments that touch the circle only at the points you have already marked (a, b, c, etc.). Label with capital letters the points where the line segments cross. You should have the same number of capital letters as lower case letters. Measure each new line segment and record its length as before. Add these measures and record in the table below. (See Diagram III.)

IV. Record the diameter of the circle in millimetres. ____________

Total of measures of segments inside of the circle	
Total of measures of segments outside of the circle	

Average of totals ____________

Hint: To compute the average, add the two totals and divide by 2.

V. Compute: $\frac{\text{Average of totals}}{\text{Diameter of circle}} =$ ____________

Repeat the experiment with a larger circle.

PI's THE LIMIT (CONTINUED)

Purpose and Use:

This activity provides the student with an alternative and historical method for approximating π. In addition, the activity could be used as an exercise for measurement with a ruler. A calculator would facilitate the computation.

Suggested Procedure:

After the activity, introduce the term circumference as the distance around the circle. Some sample discussion questions could be:

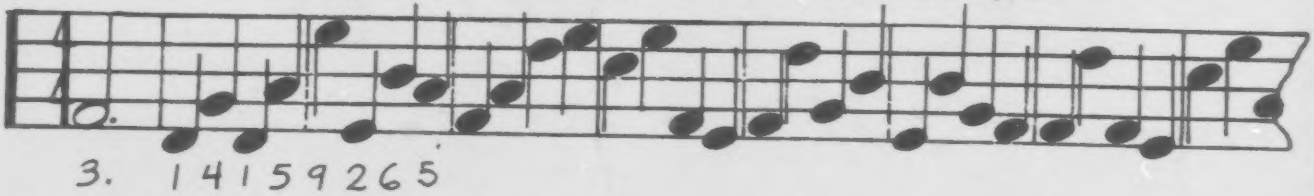
1) Do you understand why the circumference is smaller than the total of outside measures and larger than the total of inside measures of segments?
2) Is the average of totals a good approximation to the circumference?
3) How does the number of points on the circle affect the accuracy?

Content:

The ratio $\frac{\text{average of totals}}{\text{diameter of circle}}$ closely approximates the ratio $\frac{\text{circumference of a circle}}{\text{diameter of the circle}}$, which is about 3:1. The Greek letter π is used to express the ratio $\frac{\text{circumference}}{\text{diameter}}$, since the ratio is a constant and cannot be exactly expressed as a fraction or decimal.

Historical Facts & Curiosities:

1) Archimedes (287-212 B.C.), a great mathematician and scientist of ancient Greece, used a method similar to the one performed by the students to estimate that π was between 3.140845 and 3.142857.
2) In China Tsu Chung-Chih (470 A.D.) gave π = 3.1415924 which is correct to seven decimal places.
3) Today with the help of computers π has been found to more than 500,000 places. π correct to twenty places is 3.14159265358979323846.
4) The symbol π was first used in the 17th century.
5) In 1873 using a formula and making the computations with paper and pencil William Shanks of England computed pi to 707 decimal places. His representation of pi was used until 1948 when two men, using a computer, discovered that Shanks had made an error in the 528th decimal place.



6) Another method is to set π to music. The music shown above represents π in the key of C, with F having a value of 3, D the value of 1, and so on.

An excellent source for information about π is A History of π by Petr Beckmann published by the Golem Press.

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______ **District:** ______ **Area** ______
For Dates ______ to ______
Student Name ______ **Age** ______
Last First
or
Grade ______
Content Area Geometry **Skills List No.** ______

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to compare the volume of different objects having the same surface area.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the attached activity, Largest Container, to help the student discover that objects with the same surface area do not necessarily have the same volume. The exercise will give the student a better understanding of the topics of surface area and volume, as well as the confidence to attack and solve problems.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to compare the volume of objects with the same surface area.

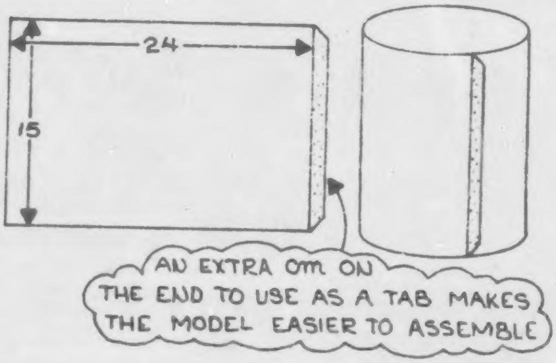
Total Days Participation ______ **out of a possible** ______
Criterion Attained: **Yes** ______ **No** ______ **Date** ______
Teacher: ______
Signature Title

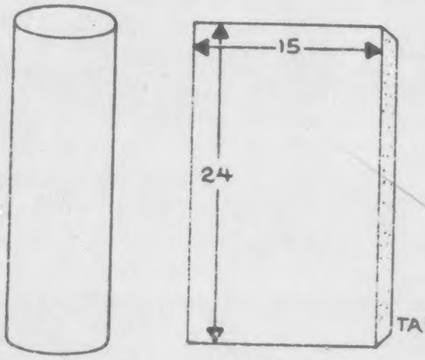
LARGEST CONTAINER

This activity will help students see that containers which have the same surface area do not necessarily have the same volume.

I Tall containers - vs - short containers

Using two rectangular pieces of tag board (shown below) students can roll up two cylinders each having the same surface area (in this case 15 cm x 24 cm or 360 cm^2).

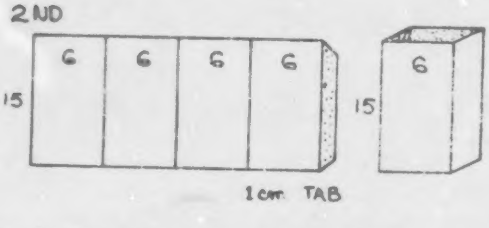

24
15
AN EXTRA cm ON THE END TO USE AS A TAB MAKES THE MODEL EASIER TO ASSEMBLE

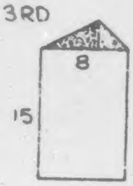


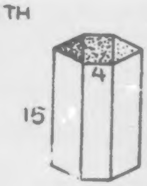
Students can study, predict and record information concerning the cylinders. Some suggestions about the surface area and volume might key them in on critical information. Have students check their predictions.

II Changing the number of sides.

To assemble the models below students will need four 15 cm x 25 cm pieces of tag board. The first piece is to be rolled into a right circular cylinder having a height of 15 cm and a circumference of 24 cm. The remaining three are marked in the appropriate places and folded into the patterns shown.


2ND
6
6
6
6
15
15
6
1cm TAB





Students can arrange the containers from least to greatest volume.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ____________________ **Area** ____________

For Dates ____________ to ________________

Student Name ____ **Age** __________
Last First **or**
Grade __________

Content Area Geometry **Skills List No.** 51303

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to determine the surface area of a cube by counting.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the two attached activities, What's on the Outside, and The Cube Painter, to introduce the student to surface area. As the student goes through the activity, he will discover that surface area is the total area of the surface of the object.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the surface area of cubes by counting.

Total Days Participation ____________ **out of a possible** ________________

Criterion Attained: **Yes** __________ **No** ____________ **Date** ______________

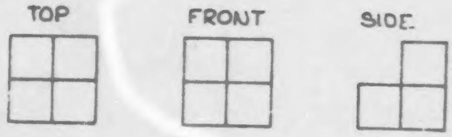
Teacher: ____
Signature Title

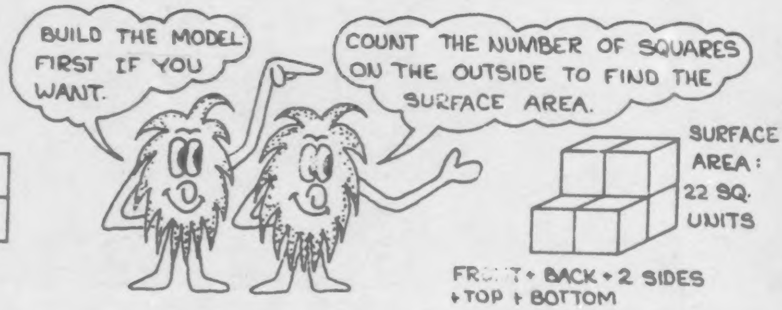
WHAT'S ON THE OUTSIDE?

Materials Needed: 15 cubes

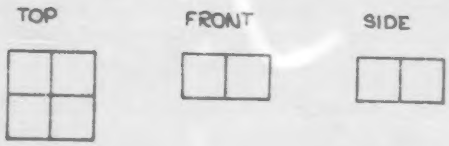
Activity: Using the three views, build each model. Find the surface area of each model.

EXAMPLE:

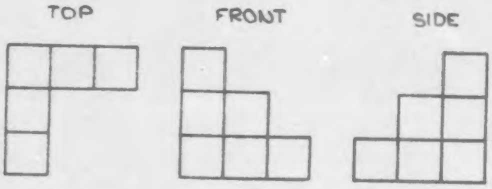

TOP
FRONT
SIDE


BUILD THE MODEL FIRST IF YOU WANT.
COUNT THE NUMBER OF SQUARES ON THE OUTSIDE TO FIND THE SURFACE AREA.
SURFACE AREA: 22 SQ. UNITS
FRONT + BACK + 2 SIDES + TOP + BOTTOM

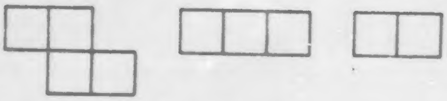
①


TOP
FRONT
SIDE

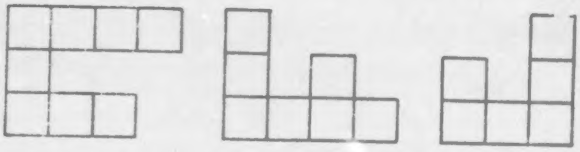
⑤


TOP
FRONT
SIDE

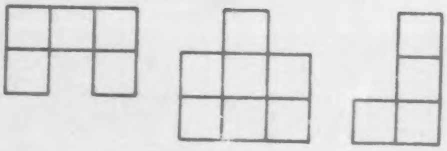
②



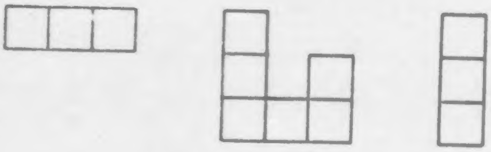
⑥



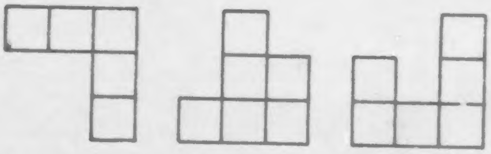
③



⑦



④



⑧ Make a model of your own and draw all three views. What is the surface area? Give your drawing to a friend to build.

THE CUBE PAINTER

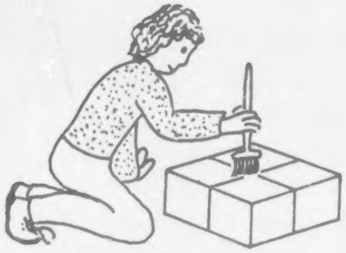
Materials: 100 cubes and a calculator

Activity:

1) Build a 2 x 2 x 1 model with the cubes.

   a) If the entire model is painted, how many cubes will have
      4 faces painted? ____
      3 faces painted? ____
      2 faces painted? ____

WHAT IS THE TOTAL NUMBER OF CUBE FACES PAINTED? ____



2) Build these models.

3 × 3 × 1 MODEL

	NUMBER OF CUBES	NUMBER OF CUBE FACES PAINTED
4 FACES PAINTED	4	4 × 4 = 16
3 FACES PAINTED	4	4 × 3 =
2 FACES PAINTED		1 × 2 =
TOTAL		

4 × 4 × 1 MODEL

	NUMBER OF CUBES	# OF CUBE FACES PAINTED
4 FACES	4	4 × 4 =
3 FACES		
2 FACES		
TOTAL		

5 × 5 × 1 MODEL

	NUMBER OF CUBES	# OF CUBE FACES PAINTED
4		
3		
2		
TOTAL		

6 × 6 × 1 MODEL

	NUMBER OF CUBES	# OF CUBE FACES PAINTED
4		
3		
2		
TOTAL		

7 × 7 × 1 MODEL

	NUMBER OF CUBES	# OF CUBE FACES PAINTED
4		
3		
2		
TOTAL		

8 × 8 × 1 MODEL

	NUMBER OF CUBES	# OF CUBE FACES PAINTED
4		
3		
2		
TOTAL		

9 × 9 × 1 MODEL

	NUMBER OF CUBES	# OF CUBE FACES PAINTED
4		
3		
2		
TOTAL		

10 × 10 × 1 MODEL

	NUMBER OF CUBES	# OF CUBE FACES PAINTED
4		
3		
2		
TOTAL		

3) For each model above how many faces on the cubes are not painted?

2 x 2 x 1 model ____
5 x 5 x 1 model ____
8 x 8 x 1 model ____
3 x 3 x 1 model ____
6 x 6 x 1 model ____
9 x 9 x 1 model ____
4 x 4 x 1 model ____
7 x 7 x 1 model ____
10 x 10 x 1 model ____

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

Form OF 8

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________ Last ______________ First ______________ **Age** ______ or **Grade** ______

Content Area Geometry **Skills List No.** 594

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the surface area of a sphere.

Activities: What will be done, when, how much (time), by whom?

The teacher can use the attached activity, Surface Area of a Sphere to introduce the student to the concept. As the student goes through the activity, he will discover that surface area is just that, the area of the surface of the sphere.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to determine the surface areas of spheres.

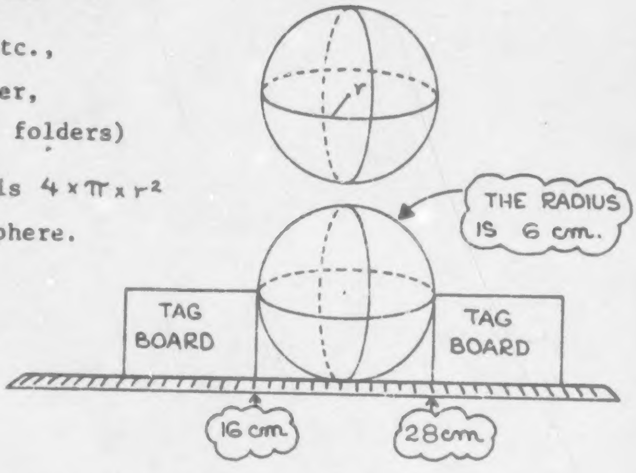
Total Days Participation ______________ out of a possible ______________

Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________________________
Signature Title

SURFACE AREA OF A SPHERE

Materials: Tennis ball, basketball, globe, etc., grid paper, felt pen, tracing paper, ruler, 2 sheets of tagboard (file folders)

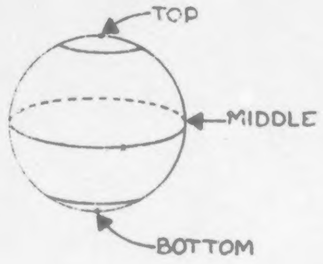


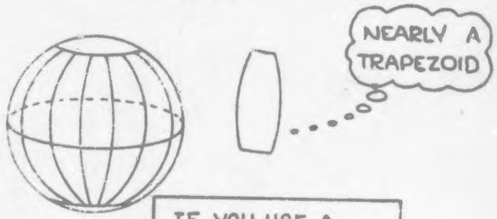
The formula for the surface area of a sphere is $4 \times \pi \times r^2$ where r represents the radius of a sphere.

The radius of a sphere can be determined by placing the sphere on a ruler and using two sheets of tag board or bookends to find the diameter as shown to the right.

The method outlined below will give a rough approximation of the surface area of a sphere. The accuracy can be checked by the formula.

1) Use a felt pen on the ball to:
   a) Draw a great circle around the middle of the ball.
   b) Draw small circles close to the top and bottom as shown.
   c) Draw equally spaced arcs from the top circle to the bottom circle. The sections formed will have the same area. If many arcs are drawn each little section is nearly a trapezoid.





2) Hold tracing paper against the ball and trace one trapezoid. Cut out the tracing and lay it on grid paper to find the area. Multiply by the number of trapezoidal shapes to find the total area of these shapes.

IF YOU USE A BASKETBALL OR SOCCER BALL YOU MAY CHOOSE TO USE THE SECTIONS ALREADY MARKED

3) Trace the upper and lower sections. Cut them out and use grid paper to find their areas.

4) Add the results in #2 and #3 to find the approximate surface area of the ball.

5) If the ball is old and heavy duty scissors are available, cut the ball into sections. These sections can be traced on grid paper to determine their area.

Form OF 8

Individual Student Short Term Plan/Record
Oregon Migrant Education Program - Title I-M - ESEA

School: ______________ **District:** ______________ **Area** ______________

For Dates ______________ to ______________

Student Name ______________________________ (Last) (First) **Age** ______ **or Grade** ______

Content Area Geometry **Skills List No.** 48601, 48602

Objective: **What are we trying to accomplish for this student in this content area, in this short period of time?**

The student will be able to find the sides of a right triangle using the pythagorean theorem.

Activities: **What will be done, when, how much (time), by whom?**

The teacher can use the two attached activities, Pythagoras on the Geoboard, and Pythagoreas Squared, to develop the concept of the pythagorean theorem. As the student becomes more comfortable with the process, the teacher can introduce the idea of nypotenuse and legs as being parts of a triangle.

Criterion: **What specific evidence will we accept to indicate that the objective was attained?**

Given a teacher made test, the student will be able to find the lengths of the sides of a right triangle using the pythagorean theorem.

Total Days Participation ______________ out of a possible ______________

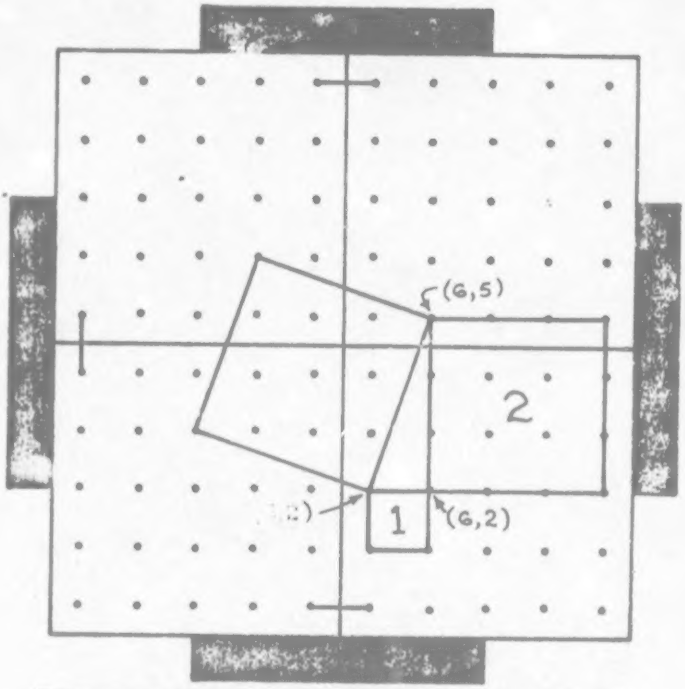
Criterion Attained: Yes ______________ No ______________ Date ______________

Teacher: ______________________________ (Signature) (Title)

PYTHAGORAS

ON THE GEOBOARD

Four geoboards joined together as shown are needed to provide enough space to investigate the relationship of the sides of a right triangle.



Depending on your class you may want to make this activity

A) an open investigation,

Make a right triangle on your geoboard. Do you notice anything about the areas of the squares that can be constructed on the sides of the triangle.

B) a student discovery,

Make a right triangle using the vertices shown in the table. Make a square on each side of the triangle. Find and record the area of the three squares. What relationship do you see in the table?

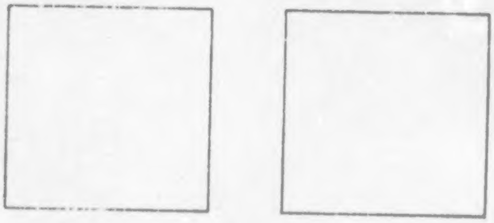
VERTICES	AREA OF SQUARE ON HYPOTENUSE	AREA OF SQUARE 1	AREA OF SQUARE 2
(1,1) (1,2)(2,1)			
(3,1)(3,4)(4,1)			
(7,3)(5,3)(7,5)			
(7,7)(7,4)(5,7)			
MAKE ONE OF YOUR OWN			

C) or a teacher directed discovery.

Have students work in groups of four. Using a transparency of dot paper, show a right triangle and the squares on the legs and hypotenuse of the triangle. Have students copy the figures on their geoboards, compute the areas of the squares and record the areas in a table. Help them to discover the relationship.

PYTHAGORAS SQUARED

Materials Needed: Four red and four blue right triangles from your teacher
Two squares from your teacher
Metric ruler



Activity:

1) Measure a side of each square. ____ cm
Are both squares the same size? ____

2) Measure the sides of one of the triangles. Short side ____ cm
Medium side ____ cm
Hypotenuse ____ cm
Are all the triangles the same size? ____

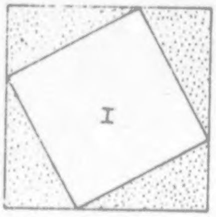


DIAGRAM 1

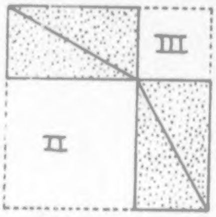


DIAGRAM 2

3) Cover one square as in Diagram 1.
Measure the sides of square I. ____ cm

4) Cover the other square as in Diagram 2.
Measure the sides of square II. ____ cm
Measure the sides of square III. ____ cm

5) What can you say about the areas of squares I, II and III?

6) Does the area of square I = the area of square II + the area of square III? ____

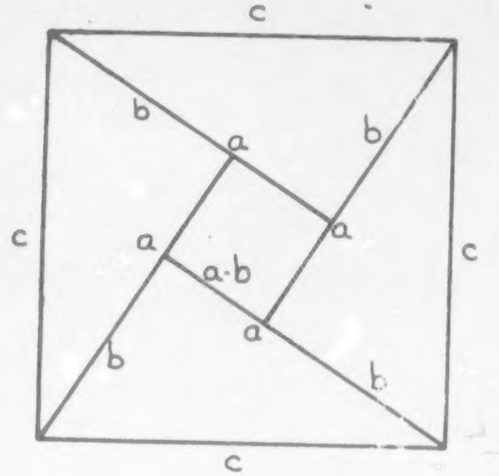
7) Side of square I ____ cm, hypotenuse of triangle ____ cm
Side of square II ____ cm, medium side of triangle ____ cm
Side of square III ____ cm, short side of triangle ____ cm

> The area of the square on the hypotenuse is equal to the sum of the areas of the squares on the other two sides.

PYTHAGORAS SQUARED

(CONTINUED)

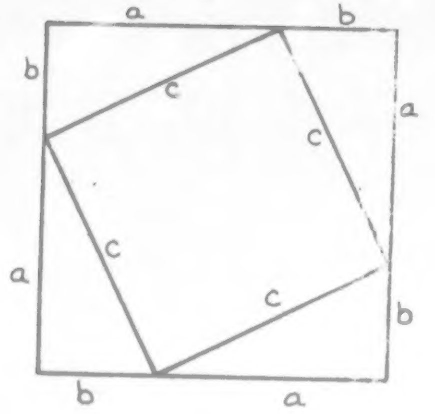
Similar activities could be done by arranging four congruent right triangles as shown in the diagram below. The algebra is shown as an explanation and would be used only with students who have had experience with the symbols.



The large square has an area of c^2. This square region is divided into four triangles each with an area of $\frac{1}{2}ab$ and a square with an area of $(a - b)^2$.

$$c^2 = 4(\tfrac{1}{2}ab) + (a - b)^2$$
$$c^2 = 2ab + a^2 - 2ab + b^2$$
$$c^2 = a^2 + b^2$$

Diagram 1 on the previous page is illustrated here. The large square has an area of $(a + b)^2$. This square region is divided into four triangles each with an area of $\frac{1}{2}ab$ and a square with an area of c^2.



$$(a + b)^2 = 4(\tfrac{1}{2}ab) + c^2$$
$$a^2 + 2ab + b^2 = 2ab + c^2$$
$$a^2 + b^2 = c^2$$

Careful use of grid paper can be used to illustrate these examples. A simple way to arrive at the area of a triangle is to use a rectangle and then cut the rectangle along a diagonal. The area of each triangle formed is one-half the area of the rectangle.

Form OP 8

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Oregon Migrant Education Program - Title I-M - ESEA

School: ______________________ **District:** ______________________ **Area** ____________

For Dates ______________ **to** ______________

Student Name ____ **Age** __________
Last First **or**
Grade __________

Content Area Geometry **Skills List No.** ______________

Objective: What are we trying to accomplish for this student in this content area, in this short period of time?

The student will be able to find the area of a trapezoid using the formula.

Activities: What will be done, when, how much (time), by whom?

The attached geoboard activity is a good one to develop the formula for a trapezoid. The geoboard will show the relationship between the trapezoid and the parallelogram. The teacher will have to emphasize the locations of the bases and height, stressing that the height is a perpendicular distance between the bases, and not a slant height.

Criterion: What specific evidence will we accept to indicate that the objective was attained?

Given a teacher made test, the student will be able to find the areas of trapezoids using the formula.

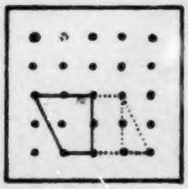
Total Days Participation ____________ **out of a possible** ______________

Criterion Attained: Yes ____________ **No** ____________ **Date** ____________

Teacher: ____
Signature **Title**

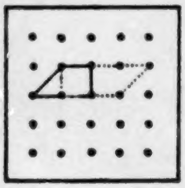
Area of a trapezoid (the height is shown along a dotted line)
Have students make a "rotated" copy of the given trapezoid.

a)



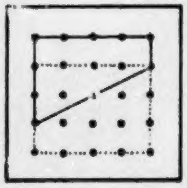
combined bases = 3 units
height = 2 units
area = 3 square units

b)



combined bases = 3 units
height = 1 unit
area = $1\frac{1}{2}$ square units

c)



AREA = $\frac{1}{2}h(b_1+b_2)$

combined bases = 4 units
height = 4 units
area = 8 square units